

NASA News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23665
AC 804 827-3966

For Release:

RELEASE NO. 78-3

January 16, 1978

SPACE SEMINAR AT NASA LANGLEY

Hampton, Va. --NASA's Langley Research Center will sponsor a government/industry seminar January 17 - 19 concerning the technology involved in developing large space systems to support Earth-orbiting space missions during the years 1985 to 2000.

Approximately 200 representatives from NASA, private industry, universities, and the Department of Defense (DOD) will attend the three-day meeting at the NASA Langley Activities Center, beginning at 8:30 a.m., January 17.

Donald P. Hearth, Langley director, will welcome participants to the seminar, and a resumé of NASA's new Large Space Systems Technology (LSST) Program will be presented by Angelo Guastaferrro, manager of the program at Langley.

The seminar is designed to create an exchange of ideas between the government and aerospace industries on the kinds of technology that will be required to build large space systems for the future.

"In a sense," Guastafarro said, "we're trying to guess what missions the Space Shuttle will be doing in the 1985 to 2000 time period. The seminar is a way of organizing our research and technology to fit the multi-mission needs of the future."

NASA Headquarters has named Langley as the lead center for the LSST Program. Langley will manage the LSST work of five other NASA field centers and several private companies, and will trade information with the Department of Defense.

While NASA has no definite programs scheduled for the 1985-2000 period, the technological base for any probable programs must be established now to make sure that future missions can be achieved in an efficient, economical and well-organized fashion.

The LSST seminar is a kind of trading session for information. Approximately 34 technical papers will be presented on various aspects of large space systems.

"The seminar will allow industry, NASA and DOD to exchange technology planning information," Guastafarro said, "and help the government determine what specific advanced technological research is required."

Attending the seminar will be representatives from six NASA technology and operational centers, 24 aerospace industries, eight universities, and four DOD centers.

The seminar will end with a panel discussion among a dozen knowledgeable government and industry representatives to help determine where research efforts need to be placed to get "the most benefit for every research dollar."

Subjects to be discussed at the seminar include predictions of structural behavior in space, particularly the loads and stresses to which structures would be subjected; studies of advanced materials and techniques for joining various kinds of structures; concepts for the distribution of the controls for large structures; and the development of electronics equipment needed for the operation and control of structures.

One example of a possible space system could be, if approved, a large, Earth-orbiting electronic "post office." An open platform system would be constructed of interconnected metal beams, or rods, stretching through space as far as one kilometer (about six-tenths of a mile) in diameter. To this open-beam platform would be attached a field of about 90 umbrella-like antennas. Kept pointed toward Earth, such a large structure would provide relatively inexpensive, rapid transmission of electronic messages from place to place on Earth.

Eugene Naumann of Langley, coordinator of the seminar, conducted a workshop on the same subject in 1976. Naumann says that similar seminars are planned each year as a way of continuing cooperation between government agencies and industry.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23665
AC 804 827-3966

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January 30, 1978

ALASKA PIPELINE DISCUSSED IN COLLOQUIUM LECTURE

Hampton, Va. --Edward L. Patton, Chairman and Chief Executive Officer, Alyeska Pipeline Service Company, will be the guest speaker for the NASA Langley Research Center colloquium on Thursday, February 2.

The colloquium will be held in the Activities Center, Building 1222, with a coffee at 2 p.m. and the lecture at 2:30 p.m.

Patton will discuss the challenges involved in building the nearly \$8 billion trans-Alaska pipeline. Since oil was discovered on Alaska's North Slope nearly 10 years ago, this pipeline has been the subject of debate, controversy and general interest. Now finished, the pipeline carries some one and one-quarter million barrels of crude oil every day from Prudhoe Bay to Valdez, Alaska, a distance of 800 miles.

A native of Newport News, Virginia, Patton graduated from the Georgia Institute of Technology with a BS degree in chemical engineering.

He held a number of management positions with Exxon and was an advisor for the company's refining operations in the Mediterranean, the Middle East and the Far East. He served as President of Alyeska, a consortium of eight energy companies, from its formation in August 1970 until he became Chairman and Chief Executive Officer in 1976.

Patton will be available for interviews during the coffee and following his talk.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
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AC 804 827-3966

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FOUR SCIENCE EXPERIMENTS CHOSEN FOR SHUTTLE FACILITY

Hampton, Va. --Four scientific experiments have been tentatively selected for NASA's Long Duration Exposure Facility (LDEF), scheduled as a major Space Shuttle payload in 1980. LDEF is managed by NASA's Langley Research Center.

The experiments will study the hazards to man of ion particles in space, the chemistry of micrometeoroids, the interstellar wind and cosmic ray nuclei.

These experiments join 23 technology experiments chosen for LDEF earlier this year.

LDEF is an unmanned, reusable, free-flying facility on which many different technical and scientific experiments can be mounted in special trays. LDEF provides an easy and economical way to conduct primarily passive experiments in Earth orbit.

Principal investigators for the scientific experiments represent three European universities, the European Space Agency and NASA's Johnson Space Center, Houston, Texas.

The new experiments were chosen from 55 proposed experiments related to scientific disciplines, including astrophysics, life sciences, lunar and planetary studies, solar terrestrial studies and upper atmospheric physics. A total of 190 candidate experiments were submitted to NASA in response to an announcement-of-opportunity distributed in June 1976.

With selection of the science experiments, 80 per cent of LDEF's experiment trays are now filled with individual research projects. The other 20 per cent will contain micrometeoroid detection panels, designed to measure the number and variety of tiny meteoroid particles in Earth orbit.

Nestled inside the Shuttle Orbiter's cargo bay during launch from NASA's Kennedy Space Center in Florida, LDEF will be placed in a circular Earth orbit of 435 kilometers (270 miles) with an inclination to the equator of 28.5 degrees.

LDEF will remain in orbit from six to nine months while its experiments are exposed to the space environment. At the end of the mission, LDEF will be retrieved by the Orbiter and returned to Earth. Experiments

will be returned to their investigators for analysis.

Selected experiments and their principal investigators are:

● Free Flyer Biostack Experiment --Investigator:

Dr. Horst Bucker, Universitat Frankfurt am Main, West Germany.

The experiment will investigate the biological effectiveness of the structured components of cosmic radiation during space flight, emphasizing the effects of individual, very heavy ions. Information will be used to quantitatively assess the hazards of heavy ion particles to man in space, and establish radiation protection guidelines for man and biological experiments in future space flights. A six-month LDEF mission will yield about 360 per cent more total dose data than a typical Apollo mission.

● Interstellar Gas Experiment --Investigators: Dr. Don L. Lind,

NASA Johnson Space Center, Houston, Texas, and Dr. Johannes Geiss, University of Bern, Switzerland.

The experiment will analyze the interstellar noble gas atoms that penetrate the heliosphere to the vicinity of Earth. The structure of the interstellar gas flux varies considerably at different points in Earth's orbit. By collecting particles at several locations, the experiment will achieve the first on-site detection of interstellar gas, and will study the dynamics of the interstellar wind as it flows through the heliosphere and

interacts with the solar photon flux and the solar wind.

Because the dynamics of the interstellar wind depend on its density and velocity before entering the heliosphere, the experiment will investigate these characteristics of the interstellar medium outside the region of the solar system.

● High Resolution Study of Ultra-Heavy Cosmic Ray Nuclei --

Investigators: D. V. Domingo and Dr. K. P. Wenzel, European Space Agency, The Netherlands; Prof. C. O. Ceallaigh, Dr. D. O'Sullivan and Dr. A. Thompson, Dublin Institute for Advanced Studies, Ireland.

The experiment will study charge and energy spectra of cosmic ray nuclei, and will search for super-heavy nuclei and heavy anti-nuclei. Information will help explain the physical processes of ultra-heavy nuclei production and acceleration at their source in interstellar space. Information on nucleosynthesis will also be obtained.

● Chemistry of Micrometeoroids -- Investigator: Dr. Fred Horz, NASA Johnson Space Center, Houston, Texas.

The experiment is designed to obtain chemical analysis of a statistically significant number of micrometeoroids, and information about micrometeoroid density, shape and mass flux. If present hypotheses are correct, that most micrometeoroids are derived from comets, their chemical characterization becomes of great significance. Comets are generally considered to be relatively unaltered objects that reflect

(some arrested condition of early solar system condensation. Cometary solids appear to be rather primitive materials and, therefore, may offer rare insight into the formation of comets and the early solar system.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23665
AC 804 827-3966

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February 13, 1978

PENINSULA STUDENTS INTRODUCED TO NASA ENGINEERING CAREERS

Hampton, Va. -- "Engineers, Strength in Crisis," is the theme of this year's observance of National Engineers Week. To give high school students an idea of what engineering is all about, NASA's Langley Research Center will sponsor a three-day career program, beginning February 21.

A total of 100 students from about 10 different schools will attend each day's program.

On February 21, the Electronics area will be featured and the students will participate in tours and seminars in the following areas: computer sciences, flight electronics for aircraft and spacecraft, electronics for research facilities and programs, and electronics for control systems and human factors. Following the seminars, the students will assemble in the Activities Center, Building 1222, for an overall electronics briefing. In the afternoon, engineers from Langley's

Electronics Directorate will talk with the students individually about their careers.

On February 22, the areas featured include space systems, marine and applications and atmospheric and environmental systems. Space Directorate engineers will talk with the students in the afternoon.

Aeronautics will be featured on February 23 and the seminar topics include flight research, aeronautical systems, and subsonic-transonic aerodynamics. The overall briefing and interaction session will follow in the afternoon.

In addition to the program at Langley, engineers will visit Peninsula and outlying schools, discussing engineers. On the Peninsula, seven high schools, two colleges, five intermediate schools and two private schools will be visited.

NASA News

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Space Administration

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VIKING SCIENTISTS AWARD STUDENT GRANT

Hampton, Va. --Student grants totaling \$5,000, for the support of undergraduate research projects in planetology or astronomy, will be made this spring by the scientists of NASA's Viking Project.

The money accompanied the annual Newcomb Cleveland Award, presented on February 15 to 150 Viking scientists by the American Association for the Advancement of Science (AAAS).

The Cleveland Award was made to all the authors of scientific papers that appeared in three special Viking issues of Science Magazine in 1976 (August 27, October 1 and December 17). This is the first year in which the award was made to a group of scientists.

The student grants will be given, in amounts ranging from \$500 to \$2,000, to fund a student's (or group of students') ideas or to supplement student work now in progress. Selections will be based on originality and feasibility, and all ideas will be treated as proprietary.

Proposals for grants must be received by April 15, 1978. Worthy projects will be selected by a representative committee of the Viking scientists. Students whose projects are chosen will be notified by May 1, so that work can be done this summer.

Proposals may involve research work in space missions now under way, work in the field, or in laboratories, observatories, libraries, or any other location consistent with the goals of the proposed work.

If any projects are based on the Viking scientific information presented in the three issues of Science Magazine, appropriate assistance may be provided by the Viking scientists.

One- or two-page proposals should specifically include the following information:

- Name, address and school of the grant applicant (or applicants).
- Goal of the work (i. e. , what results are expected).
- When and how the work will be done.
- Amount of funding required, and how funds will be used.
- Name and address of a faculty member or other person as reference.

Proposals should be mailed to: Viking Student Grant, Viking Project Office, Mail Stop 159, NASA Langley Research Center, Hampton, VA 23665.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23665
AC 804 827-3966

For Release:

RELEASE NO. 78-8

February 21, 1978

BOEING OFFICIAL TO SPEAK FOR NASA COLLOQUIUM

Hampton, Va. --H. W. (Bob) Withington, Vice President for Engineering, Boeing Commercial Airplane Company, will be the guest speaker for the NASA Langley Research Center colloquium on Monday, February 27. He will speak on "Commercial Air Transportation Developments in the Next Three Decades."

The colloquium will be held in the Activities Center (Building 1222) with a coffee at 1:30 p.m. and the lecture at 2 p.m.

In his talk, Withington points out that the future of commercial air transportation is being strongly influenced today by market, environmental, energy, legal, financial and technological factors. He will then examine each factor and predict what effect each might have on industry, both in the near-term and to the 21st century. He will also explore the great potential for both modified and all-new air transport systems, with primary emphasis on the airplane element.

Withington has been with the Boeing Company since 1941. Some of the positions he has held include assistant general manager for engineering and product development in the Company's Seattle Division; director of engineering of the Aerospace Division; vice president-manager of the Supersonic Transport Division; and vice president-engineering of the 747 Division. He was named to his present position in January 1973.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
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AC 804 827-3966

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February 21, 1978

SATELLITE TEACHING EXPERIMENT CONDUCTED AT NORTH CAROLINA A & T

Hampton, Va. --A demonstration of curriculum sharing, using television and NASA's Communications Technology Satellite (CTS), was recently conducted at North Carolina A&T State University in Greensboro.

The demonstration, planned by NASA's Langley Research Center, was the first time a predominantly black college conducted such an educational experiment.

Two days of telecasts originated from North Carolina A&T. They were transmitted to the CTS, located 22,500 miles above the Earth, by NASA's Portable Earth Terminal (PET), a ground-based communications system contained in a trailer.

The program signals were relayed from the CTS to Jackson State University in Mississippi; Bell-Northern Research Ltd. in Ontario, Canada; Stanford University and Rockwell International in California.

Participants in each location were able to see and communicate with each other.

The program was funded by a NASA contract to investigate the feasibility of using satellites in sharing curriculum information, research techniques and results. The topics discussed included mass communication, metallic oxide and microelectronics research, advances in gallium arsenide solar cells, programs and research in chemistry, advanced institutional development programs at minority institutions, and solid state technology and data acquisition.

Included in the program was a question and answer session with Frederick D. Gregory, one of the Space Shuttle astronauts recently selected by NASA.

Almost seven hours of satellite time were made available by NASA's Ames Research Center, which controls the CTS. The Lewis Research Center is responsible for the Portable Earth Terminal.

The program was considered a great success by officials at the North Carolina campus. They hope to schedule another program again soon.

NASA News

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Space Administration

Langley Research Center
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AC 804 827-3966

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February 23, 1978

CTOL TRANSPORT TECHNOLOGY CONFERENCE TO BE HELD
AT LANGLEY

Hampton, Va. --NASA's Langley Research Center will sponsor a government/industry conference February 28 through March 3 concerning technology advances in the design and operation of conventional takeoff and landing (CTOL) transport aircraft. The conference will begin at 8:30 a.m., February 28, in the Langley Activities Center (Building 1222).

The technical sessions will include presentations of new technology generated by NASA in-house and contract efforts, including the ongoing Aircraft Energy Efficiency Program (ACEE). Organizations presenting papers include six companies in the airframe and engine industry, two universities and four NASA Centers. Approximately 300 people are expected.

The conference will pen with an overview of NASA's CTOL program by Dr. James J. Kramer, Associate Administrator, Aeronautics and Space Technology, NASA Headquarters. Donald P. Hearth, Langley Director, will then welcome the conference participants.

The 45 presentations are organized into six disciplinary sessions: propulsion, structures and materials, laminar flow control, advanced aerodynamics and active controls, operation and safety, and advanced systems.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
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AC 804 827-3966

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March 6, 1978

BOTANIST TO SPEAK TO LANGLEY EMPLOYEES

Hampton, Va. --Dr. Walter H. Lewis, Professor of Botany at Washington University and Senior Botanist at the Missouri Botanical Garden, will be the guest speaker for the colloquium lecture at NASA's Langley Research Center on March 13, 1978. The colloquium will be held in the Activities Center (Building 1222) with a coffee at 2 p.m. and the lecture at 2:30 p.m.

Lewis will speak on "Herb Use and Abuse." He will discuss the use of plant-derived products in modern medicine. Many of the present day prescriptions have their roots in herbal folk medicine, a point clearly made in Medical Botany, a recent book Lewis co-authored with his wife, Dr. Memory P. F. Elvin-Lewis.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
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For Release:

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March 3, 1978

LANGLEY TO HOST AIRFOIL CONFERENCE

Hampton, Va. --NASA's Langley Research Center will host a conference on Advanced Technology Airfoil Research from March 7 to 9, at the Activities Center, Building 1222.

The conference is designed to provide the entire aviation community with a comprehensive review by NASA, its supporting contractors, and University grantees of the latest technical developments and detailed progress in airfoil computational analysis and design methods, airfoil test facilities and techniques, and various applications of new airfoil technology.

The technical sessions will include discussions and presentations on progress in mathematical codes for use on electronic digital computers for airfoil analysis and design, coupled with progress in analogue computers through wind tunnel test facilities and special techniques of investigation; general aviation aircraft; transports;

rotorcraft; propellers; windmills; and agricultural aircraft.

Co-chairmen of the conference will be Al Gessow, NASA Headquarters and Robert E. Bower, Langley's Director for Aeronautics. Honorary co-chairmen will be Ira H. Abbott, NASA Headquarters (retired) and Dr. Richard T. Whitcomb, Langley.

A dinner will be held for the conferees at the Hampton Holiday Inn on March 7, at 7 p.m. Featured speakers will be Ira Abbott, speaking on "NACA Airfoil Research Recollections" and Richard Whitcomb, speaking on "NASA Airfoil Research - New Beginnings."

NASA News

National Aeronautics and
Space Administration

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RELEASE NO. 78-13

For Release:

Karen E. Miller
(804-827-2934)

March 22, 1978

THE SPACE AGENCY COMES DOWN TO EARTH

Hampton, Va. -- While many NASA people still have their eyes set on the stars, researchers at the Langley Research Center are looking closer to Earth, focusing on the problems of agricultural aircraft.

The first recorded use of an airplane in agriculture was on August 3, 1921, when a grove of trees was treated for an infestation of caterpillars. The test was successful and commercial dusting activity took off in a cloud of spray. By 1930, about 25 companies were operating with about 100 airplanes; by 1950, those numbers grew to 2,000 companies and 5,000 airplanes.

Up to 1950, airplanes had to be converted from some other purpose for agricultural use. Military trainers were the most widely

used, and operators usually designed, built and installed dusting and spraying equipment themselves.

The first aircraft designed especially for agricultural use appeared around 1950, and the industry has continued to grow. In 1976 there were approximately 8,500 fixed and rotary wing aircraft in agricultural service, flying about 2.5 million hours over some 250 million acres.

Agricultural aircraft have improved, but they still rely on 1940's technology. The aerial applications industry recognizes this shortcoming and has asked NASA to study several problems. Drift, swath guidance, liquid and dry material distribution systems, and aircraft handling qualities that cause pilot fatigue are some of the problems. Another major concern involves attempts to make the wake vortex of an airplane work for, rather than against, aerial applications. Aerodynamic concerns involve reducing drag for better fuel efficiency and developing appropriate high-lift concepts to improve takeoff, landing and turning performance.

Dr. Bruce Holmes, of the Safety and Operating Problems Branch, Flight Research Division (FRD), is manager of the Langley program. He says that during this year the problems "will be studied through the Vortex Research Facility, Full-Scale Wind Tunnel and actual flight tests." The Vortex Research Facility work is managed by

Frank Jordan, of the Dynamic Stability Branch, Subsonic-Transonic Aerodynamics Division (STAD).

Full-Scale Tunnel (FST) activities are directed by Joseph L. Johnson, Jr., Assistant Head of the Dynamic Stability Branch. Clyde McLemore, also of DSB, is project engineer for agricultural airplanes in the FST.

Phil Brown, Operations Branch of FRD, will be the primary research pilot when flight tests begin.

In the Vortex Research Facility, small-scale models of agricultural aircraft are tested to study interactions of the aircraft wake with dispersed spray and granular materials. Jordan said, "these interactions contribute to two of the most serious problems facing the ag aircraft community, drift of toxic chemicals from target areas and nonuniform applications within a swath."

Test methods to simulate aerial applications are being developed in this facility. Baseline data will be collected to determine wake characteristics of agricultural aircraft. Tests will then be performed to measure airborne dispersal transport and ground deposition. The scale model will disperse polystyrene particles or glass beads as it passes through the test section. The particles will stick to double-sided tape covering the floor and will be counted with the help of a microscope. Distribution will then be plotted and analyzed for effects

on dispersal systems to obtain interactions more favorable to wide, uniform swath deposition patterns and reduced drift.

In the Full-Scale Tunnel, full-scale aircraft and dispersal systems for both liquid and solid applications will be tested. Baseline data collected on present technology will be used in analysis to improve aircraft aerodynamics and dispersal system efficiency.

In the aerodynamics phase, performance and stability and control tests will be conducted and several modifications designed to provide overall system improvement will be examined. Some modifications to be investigated include leading-edge slats for high-lift improvement, and ring cowl and wing-fuselage fairings for drag reduction and improved wake characteristics. Wake modification concepts such as vortex attenuating splines and winglets, shown to have possible beneficial effects on wake-dispersal interaction in the Vortex Research facility, will be evaluated from an aerodynamics standpoint.

Tests will be conducted on aircraft and dispersal systems separately and as a single unit to provide data for performance estimates and to identify interference problems.

Laser spectrometer studies will be conducted to analyze liquid droplet breakup from spray nozzles in the airplane's wake. The ultimate goal of this research is the development of nozzle technology for improved control of droplet sizes, reduced amounts of very fine droplets and reduced drift.

The flight tests are scheduled to begin in the fall of 1978 at the Wallops Flight Center. Holmes and Brown got a good dose of how it feels to be "ag pilots" last year when they attended the Ayres Ag Aviation Training School in Albany, Georgia. They became certified agricultural pilots after 120 hours of ground school and 50 hours of flying during the five-week course.

The aircraft used in the Full-Scale Tunnel and flight tests will be an Ayres Thrush S2R-800, one of the largest agricultural aircraft. The Thrush has 800 horsepower, carries 400 gallons of liquid and costs about \$80,000. Originally loaned to Langley by Rockwell International, ownership of the aircraft and Thrush manufacturing rights were sold to the Ayres Company earlier this year.

One of the most interesting flight tests to be performed will involve spraying colored water on paper strips anchored to the ground. Brown will do the spraying, but the hard part comes after the flying. Every droplet on the paper must be measured, counted and plotted. This test will show exactly what happens to liquid chemicals after they leave the airplane.

Tests will be conducted with many of the devices tested in the wind tunnel to check their effects on aircraft performance and handling qualities and dispersal patterns.

NASA News

National Aeronautics and
Space Administration

Langley Research Center
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AC 804 827-3966

RELEASE NO. 78-14

For Release:

Karen E. Miller
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March 23, 1978

MODEL BUILDER CHOSEN

Hampton, Va. --Micro Craft, Inc., Tullahoma, Tennessee, has been selected for negotiation leading to award of a contract to design and build precision models for NASA's Langley Research Center.

The models, designed for research and development projects, will be primarily used for wind tunnel tests. They will be small scale and of controlled shape and finish.

Models will be made of metals, moldable or formable materials, fiberglass reinforced resins, woods or combinations. Specialized model support equipment and other unique equipment needed to test models may also be required.

Micro Craft estimates the value of this cost-plus-fixed-fee contract to be approximately \$2.8 million for the basic 3-year period. There

is also a 2-year option which the company has valued at approximately \$2.1 million.

The contract will go into effect approximately June 24, 1978. It will be managed by the NASA Langley Research Center.

NASA News

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Space Administration

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Hampton, Virginia 23665
AC 804 827-3966

RELEASE NO. 78-16

For Release:

Maurice Parker
(804-827-2934)

April 13, 1978

NEW NASA/ARMY HELICOPTER MAKES FIRST FIXED-WING FLIGHT

Hampton, Va. --A new kind of research helicopter--equipped with rotors, wings and two engines--lifted off the runway at NASA's Wallops Flight Center on Virginia's Eastern Shore the morning of April 10.

It was the first flight of the Rotor Systems Research Aircraft (RSRA) in its full compound helicopter and fixed-wing configuration.

Powered by two TF34 turbofan engines, the RSRA accelerated down the runway and climbed to an altitude of 2,000 feet, using the combined lift of its 45-foot wing and five-blade S-61 rotor system.

The compound RSRA was flown by experimental test pilots Charles Reine and Gerald Stofer of Sikorsky Aircraft, builders of the RSRA.

On hand to witness the first flight were Oran Nicks, Deputy Director of NASA's Langley Research Center, and Leo Kingston, Chief of Advanced Research and Development for Sikorsky Aircraft.

Two RSRA vehicles were built by Sikorsky for a program jointly managed by NASA and the U. S. Army. The program will develop technology to increase rotor aircraft speed, performance, reliability, and safety, and will seek to reduce helicopter noise, vibration and maintenance.

Both RSRA vehicles will be tested by Sikorsky, under contract to NASA's Langley Research Center, for approximately 80 hours of flight time before they are delivered to NASA and the Army for flight research at NASA's Ames Research Center in California.

Sam White, NASA/Army Project Manager for the RSRA, said that the aircraft "will provide the United States with a highly sophisticated and much needed public facility for continued development and understanding of rotary wing technology.

"The RSRA helicopters will be used by NASA and the Army to investigate and evaluate a wide variety of existing and advanced rotor systems," White said. "The RSRA will help eliminate the costly practice of having to develop or extensively modify helicopter aircraft in order to conduct flight investigations for each promising new rotor concept. The RSRA is readily adaptable to accommodate new rotors and provide precise measurements of a variety of rotors under repeatable test conditions."

The RSRA will permit rotor systems to be tested through a wide range of maneuvers, altitudes and airspeeds. These kinds of tests, particularly maneuvering flight, cannot be done in wind tunnels.

RSRA will also allow a better assessment of rotor performance because of its ability to isolate in-flight rotor peculiarities from aircraft system characteristics, which cannot be done on the ground or in other aircraft.

Because it can be fitted with fixed wings, the RSRA can test rotor systems that might be too small to support an aircraft or that have unproven control characteristics.

The RSRA also provides extra safety for its crew. Any rotor system can be pyrotechnically separated from the aircraft without jeopardizing the RSRA's ability to return safely to its base.

This flight was made by the same RSRA that successfully recorded the first flight of a fully qualified helicopter emergency system. The system provides severance of the main rotor blades, separation and fragmentation of canopies, and upward extraction of the crew.

The second RSRA is also being tested at Wallops under direction of the Langley Research Center. It has a unique rotor vibration isolation system that provides wide-band weakening of vibrations to the fuselage from the main rotor. This feature allows installation of different rotors on the RSRA without any fuselage modification.

NASA News

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RELEASE NO. 78-17

For Release:

Karen E. Miller
(804-827-2934)

April 13, 1978

SDC INTEGRATED SERVICES SELECTED FOR CONTRACT NEGOTIATION

Hampton, Va. --SDC Integrated Services, Inc., McLean, Virginia, has been selected for negotiation leading to award of a contract to provide support services for the operation of the Digital Computer Complex at NASA's Langley Research Center.

The Digital Computer Complex is used by all segments of the Center in carrying out research programs through analytical studies, real-time simulations and experimental data reductions. Services to be provided under this contract include operation of the computing and data handling equipment; operational and performance analysis; key-punch and auxiliary equipment operation. In addition, research data reduction such as programming, processing preparation and data management will be provided.

SDC has estimated the value of the 2-year base period of this contract to be approximately \$5.7 million. They have estimated the 1-year priced option to be worth about \$3 million. There are also two 1-year unpriced options to this cost-plus-award-fee contract.

Work is scheduled to begin on June 8, 1978. This contract will be managed by NASA's Langley Research Center.

NASA News

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Space Administration

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AC 804 827-3966

RELEASE NO. 78-18

For Release:

Maurice Parker
(804-827-2934)

April 14, 1978

RECENT OZONE DEPLETION MAY BE NATURAL EFFECT

Hampton, Va. -- Depletions in the Earth's protective layer of ozone since 1970 may be more affected by natural solar activity than by man-made pollutants, according to an atmospheric scientist at NASA's Langley Research Center.

Monthly variations in ozone, measured by an instrument aboard NASA's Nimbus 4 satellite, give evidence that the Earth's ozone concentrations may be controlled by the Sun's 11-year cycle of activity.

The discovery is being presented this week by Dr. Gerald M. Keating in a scientific paper at the Spring meeting of the American Geophysical Union in Miami Beach, Fla.

Ozone measurements from the Nimbus instrument, called IRIS (Infra-red Interferometer Spectrometer), cover 99 per cent of the Earth and establish the first evidence of a relationship between the monthly variations of ozone and solar activity.

There is evidence that global ozone has depleted since 1970. Scientists have predicted that such a depletion could occur due to freon gases and other man-made pollutants. On the other hand, the new results from IRIS indicate that the depletion may be principally caused by a decrease in solar activity since 1970 rather than by pollutants.

The Earth's thin but essential layer of ozone maximizes near 20 kilometers (12.5 miles) in the stratosphere.

Depletions in ozone allow more ultraviolet radiation from the Sun to penetrate to the Earth's surface. There is evidence that increases in this radiation can increase the incidence of skin cancer and other disorders.

In his paper, Keating points out that, in addition to modifying the Earth's ozone shield, variations in solar ultraviolet radiation could produce other variations that might affect the Earth's climate.

Keating has also studied the link between variations in solar activity and variations in the atmosphere at the higher satellite altitudes. As principal investigator for Langley's series of Air Density Explorer satellites, Keating discovered that air densities at satellite altitudes vary by more than a factor of 10 in relation to solar activity.

"More information is needed about the nature of variations in the Sun's radiation," Keating states, "in order to understand fully how the Sun may be controlling our environment."

The solar ultraviolet radiation that is responsible for producing ozone may decrease as solar activity decreases. This may be the principal cause for the relation between ozone and solar activity and the principal cause of ozone depletion since 1970.

Decreases in solar ultraviolet radiation can also result in the increase of nitric oxide, which is a catalyst for ozone destruction, causing further ozone depletion.

Although freon gases may not yet have produced a detectable effect on ozone, they probably will in the future. Freons decompose in the stratosphere and release chlorine, which is also a catalyst for ozone destruction. The effect of freons can be more accurately determined after corrections are made for natural variations of ozone, such as those related to solar activity.

Keating's paper is entitled "Evidence of Response of Global Mean Ozone to Monthly Variations of Solar Activity" (SA-78).

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RELEASE NO. 78-19

For Release:

Karen E. Miller
(804-827-2934)

April 14, 1978

COLLOQUIUM SPEAKER TO DISCUSS "APPLICATIONS OF CATASTROPHE THEORY"

Hampton, Va. --Professor E. Christopher Zeeman will be the guest speaker for the NASA Langley Research Center colloquium lecture on Thursday, April 20. The lecture will be held in the Langley Activities Center, Building 1222, at 2:30 p.m. A coffee will be held at 2 p.m.

Zeeman will discuss the applications of catastrophe theory. A Fellow of the Royal Society, he is a mathematician with the Mathematics Institute, University of Warwick, in Coventry, England.

For many years scientists have been describing physical events by constructing mathematical models primarily based on differential calculus. Although this approach has been very useful, differential equations suffer an inherent limitation: they can describe only those phenomena where change is smooth and continuous. Catastrophe theory

is a new method of modeling discontinuous and divergent phenomena in the sciences, and is based on fundamental theorems in mathematics. Zeeman will discuss the basic concepts of this theory and present applications of the concepts for various scientific disciplines.

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RELEASE NO. 78-20

For Release:

Karen E. Miller
(804-827-2934)

April 18, 1978

VOUGHT CORPORATION AWARDED NASA CONTRACT

Hampton, Va. --The Vought Corporation, of Dallas, Tex., has been awarded a contract to provide five Scout launch vehicles to the National Aeronautics and Space Administration.

Vought has been the Scout Project's prime contractor since 1959. The first Scout was launched on July 1, 1960, and was designed to place a 130-pound payload into a 300 nautical-mile circular Earth orbit. Today's Scout is designed to place a 404-pound payload in that orbit.

Scout vehicles are launched from Wallops Island, Va.; Vandenburg Air Force Base, Calif.; and San Marco, in Kenya, Africa.

This contract includes providing associated hardware, such as separation systems and heat shields.

This configuration of Scout vehicles is known as Phase 8. One hundred seven (107) vehicles comprised Phases 1 through 7; 96 of these

have been launched.

The incentive contract is valued at approximately \$5 million. It will be managed by NASA's Langley Research Center.

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RELEASE NO. 78-21

For Release:

Karen E. Miller
(804-827-2934)

April 18, 1978

KILGORE TO RECEIVE JONES AWARD

Hampton, Va. -- Edwin C. Kilgore, Director for Management Operations at NASA's Langley Research Center, has been selected as one of two recipients of the first Roger W. Jones Award for Executive Leadership, 1978.

Sponsored by The American University, the Jones Award recognizes federal career executives who have demonstrated superior leadership resulting in outstanding organizational achievement. They must also have been successful in developing managers and executives for career service.

Kilgore was nominated for this award by NASA Administrator, Robert A. Frosch. He will be presented a bronze statue and citation by Roger Jones and University officials on May 13 at The American University Honors Convocation in Washington, D. C.

In his Langley position, Kilgore is responsible for Center activities in personnel, financial management, procurement, management support, business data systems, scientific and technical information, occupational health services and technology utilization. He has held this position since early 1975.

From 1970 to 1975, he served in several management positions at NASA Headquarters, including Deputy Associate Administrator (Management) and Acting Associate Administrator in the Office of Aeronautics and Space Technology. In 1974, he was appointed Deputy Associate Administrator for Center Operations, a management office responsible for all NASA field center operations.

Kilgore is a graduate of Virginia Polytechnic Institute and State University, where he received a bachelor of science degree in mechanical engineering. He has been with NASA since his graduation in 1944.

His past honors include NASA's Medal for Outstanding Leadership, a NASA Lunar Orbiter Project Group Achievement Award for Outstanding Performance. He also received the Honorary Group Achievement Award of the Rocket Motor Review Board for his work in helping achieve a record of 97 consecutive successes for solid propellant rocket motors managed by Langley.

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Langley Research Center
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RELEASE NO. 78-22

For Release:

Karen E. Miller
(804-827-2934)

April 21, 1978

FRIEDMAN TO SPEAK ON "EQUALITY AND FREEDOM IN THE FREE
ENTERPRISE SYSTEM"

Hampton, Va. --Dr. Milton Friedman, 1976 Nobel Laureate in Economics, will be the guest speaker for the Langley Colloquium Series on May 1. Friedman will speak at 2:30 p.m. in the Activities Center (Building 1222), preceded by a coffee at 2:00 p.m. His presentation is entitled "Equality and Freedom in the Free Enterprise System." The colloquium will be open to Langley employees and news media representatives only.

Friedman will also present a lecture at 8:00 p.m. at the Hampton Coliseum as part of the Public Lecture Series, Our Future In The Cosmos. The evening lecture, sponsored by the Langley Research Center and the College of William and Mary, is open to the public. Tickets may be obtained by calling 877-9231, extension 200.

Friedman's lectures will address the concept of equality of income and the consequences of its implementation, either by decree or by freedom of the individual to make the most use of his talents. The thrust of his presentations may be found in his statement: "...equality is but another face of freedom."

Dr. Arthur Kemp, former Friedman student, has classified Friedman as a liberal, in the classical 19th-century sense of the word, who regards the market mechanism as the most efficient instrument for coordinating the economic activities of men. Friedman has been described as brash, provocative, independent, intellectually stimulating, and even occasionally down-right quarrelsome. In Kemp's words: "Friedman may sometimes be wrong, but he is never uncertain."

Friedman's professional fame arises from his eight-point theory of monetary dynamics. His thesis, which is opposite to that of Keynesian theory, advocates a 100 percent reserve plan, money supply increase at a constant annual rate, and freely flexible floating rates of exchange between national currencies. His popular fame is for his ability to discuss economic issues at the layman level. He has advocated an all-volunteer army, a negative income tax, taxation restraint, and a voucher system for education. He has opposed government price and wage controls and licensing of professions.

Friedman is presently a Senior Research Fellow at the Hoover Institution, Stanford. His teaching positions have included the University of Chicago, Columbia University, and Cambridge University. In addition to his earned Ph. D. from Columbia University, he is the recipient of 11 honorary degrees. He has held research positions in government, education, and private-enterprise systems. He is the author of over 20 major writings, including Capitalism and Freedom (1962) and There is No Such Thing as a Free Lunch (1972). In addition to his regular column in "Newsweek," Dr. Friedman is an active member of numerous societies and boards.

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National Aeronautics and
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RELEASE NO. 78-23

For Release:

Karen E. Miller
(804-827-2934)

May 1, 1978

LANGLEY HOSTS SENIOR CITIZENS

Hampton, Va. -- Langley will host the fifth Senior Citizens Day on Tuesday, May 9. Sponsored by the Peninsula Agency on Aging, the program will be held from 10 a.m. to 12 noon in the Activities Center (Building 1222).

About 400 senior citizens have been invited. Some of them will drive themselves and others will come in buses provided by area military bases. Langley Director Don Hearsh will welcome the group at 10 a.m. They will then hear a talk on "Medical Spinoffs" by John Samos, Head of the Technology Utilization and Applications Program Office. Dr. Charles W. Swain will then speak about "Life in the Tech House."

Following the briefings, there will be a social and a band concert by the 564th Air Force Band combo.

NASA News

National Aeronautics and
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Langley Research Center
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RELEASE NO. 78-24

For Release:

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May 1, 1978

BLACKSTOCK RECEIVES FIRST MAJOR NASA ENERGY AWARD

Hampton, Va. -- Thomas A. Blackstock recently received the first major award for an Energy Saving Proposal at NASA's Langley Research Center. Langley Director Donald P. Heath presented him a check for \$1,245, the largest monetary suggestion award ever presented at the Center.

Blackstock, of the Space Systems Division, was recognized for his outstanding contribution toward upgrading the high-pressure air supply system for the Continuous Flow Hypersonic Tunnel. His suggestion enables the tunnel to use intermittent, short-duration flow blow-down test capability rather than operating in the longer-duration continuous flow mode.

The energy savings in the first year after incorporating Blackstock's suggestion are estimated at \$30,000. The savings were achieved without compromising the tunnel's research capability. Since wind tunnels

consume over one-third of the electrical energy purchased at Langley, Blackstock's achievement is particularly significant.

The Continuous Flow Hypersonic Tunnel represents Langley's only large scale, Mach 10, aerothermodynamic test capability. It played an important role in the Shuttle program and will play a key role in developing low cost advanced space transportation vehicles.

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RELEASE NO. 78-25

For Release:

Karen E. Miller
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May 1, 1978

NASA LANGLEY SUPPORTS SMALL BUSINESSES

Hampton, Va. --President Carter recently proclaimed the week of April 30 - May 6 as Small Business Week. Of the 14 million businesses in the United States, more than 13 million of them are small, including some three million farms. Together they provide employment for over half the business labor force and account for more than 48 percent of the gross business product.

At NASA's Langley Research Center, small businesses are strongly supported. In 1977, small firms were awarded approximately \$36 million in contracts. Joseph F. Braig, Small and Minority Business Staff Specialist, Procurement Division, said "At the midpoint of fiscal year 1978, approximately \$31 million in contracts has gone to small firms." The goal for fiscal year 1978 is \$42 million.

Under these contracts, small firms provide services such as security guards, transportation, research and development, Base maintenance and warehousing.

NASA News

National Aeronautics and
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Langley Research Center
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RELEASE NO. 78-26

For Release:

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May 3, 1978

VIKING ART EXHIBIT OPENS AT NASA VISITOR CENTER

Hampton, Va. --A Viking Art Exhibit will be held at NASA's Langley Research Center for the next few weeks. About eight paintings are on display in the lobby of the Langley Visitor Center.

Jim Butcher, of Bel Air, Md., was commissioned by NASA Headquarters to record on canvas the Viking Mission to Mars. The Viking Project, managed by Langley, successfully landed two automated spacecraft on the red planet in the summer 1976.

Butcher is a free lance commercial illustrator. During the Viet Nam war, he was a combat artist for the Marine Corps. A native of Hagerstown, Md., Butcher attended the Maryland Art Institute.

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RELEASE NO. 78-27

For Release:

Maurice Parker
(804-827-2934)

IMMEDIATE

PROGRAM ON WOMEN AT NASA VISITOR CENTER

Hampton, Va.--A special program called "Women In Aviation" will be presented in the Visitor Center at NASA's Langley Research Center each weekend during May.

The slide and sound tape program features highlights of the activities and contributions of women to aviation. It is made available from "The 99s," an international organization of women interested in aviation. The original group, founded in the 1930s, had 99 members, including Amelia Earhart and Anne Morrow Lindbergh.

The Langley Visitor Center is open, free to the public, from 8 a.m. to 4:30 p.m. Monday through Saturday, and from noon to 4:30 p.m. on Sunday.

May 5, 1978

NASA News

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RELEASE NO. 78-28

For Release:

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May 8, 1978

MEDICAL CONFERENCE TO BE HELD AT LANGLEY

Hampton, Va. -- A conference on safety, occupational medicine, and environmental health will be held at NASA's Langley Research Center May 15-18. About sixty representatives from all the NASA field centers are expected to attend the meeting in the Langley Activities Center, Building 1222.

The meeting begins at 8:30 a.m. on May 15 with a welcome by Fred Bowen, Langley Technical Manager for Management Operations. Topics to be discussed include audiometric testing, types of hearing loss, rehabilitative techniques, noise protection equipment, and computerized treadmill data. Just before lunch, Dr. Fred Kelly, Langley Medical Director, will discuss the Langley nutrition program and then the group will experience the program first-hand with lunch in the cafeteria.

At 9 a.m. on May 16, Donald P. Hearth, Langley Director, will open the meeting. Topics that day include workmen's compensation,

disability, continuation of pay status, and Langley's occupational medicine, environmental health, and safety programs.

The agenda for May 17 includes discussions of space suit testing, new approaches in workplace health standards, fire protection, Space Shuttle safety challenges, the kinetic method of lifting, and system safety as applied to wind-turbine generators.

On May 18, nuclear safety in space systems, Space Shuttle occupant safety, and new firefighting equipment are some of the topics to be discussed.

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RELEASE NO. 78-29

For Release:

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May 8, 1978

LANGLEY DIRECTOR RECEIVES HONORARY DOCTORATE

Hampton, Va. -- Donald P. Hearth, Director of NASA's Langley Research Center, received the honorary degree of Doctor of Science during commencement exercises at George Washington University, Washington, D. C., on Sunday, May 7.

Guest speaker at graduation ceremonies for the School of Engineering and Applied Science, Hearth discussed "Technology and the Future."

During his address, Hearth said, "There will continue to be a strong tendency to characterize technology as either the savior of society's problems or the villain in the drama of life."

"Technology is not magic," he continued, "but it can help solve some of society's problems." The address included a short history of technology and projections of some of the possibilities and uses of technology in the near future.

Hearth used the motion picture "Star Wars" to make an analogy

about technology. "It's not just about good guys and bad guys, but about good technology and bad technology ... We want a computer age with room for feelings. We want machines, but not the kind that run us. We want technology, but we want to be in charge of it."

Hearth has directed the activities of the Langley Research Center since September 1975. He is responsible for the Center's aeronautical and space research programs, as well as its facilities, people and administration. He also serves as an advisor to the NASA Administrator.

He is the recipient of the NASA Exceptional Service Medal (1969), a NASA Executive Performance Award (1975) and NASA's highest honor, the Distinguished Service Award (1975).

A native of Fall River, Massachusetts, Hearth earned a bachelor of science degree in mechanical engineering from Northeastern University, Boston, in 1951. He did post-graduate work at the University of California, Los Angeles, and the University of Southern California from 1959 to 1961, studying rocket propulsion, hypersonic aerodynamics, heat transfer, electronics, and public administration. He graduated from the Federal Executive Institute in 1973.

NASA News

National Aeronautics and
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RELEASE NO. 78-30

For Release:

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May 10, 1978

NASA TO HOST DATA MANAGEMENT CONFERENCE

Hampton, Va. -- A conference on "Engineering and Scientific Data Management" will be held on May 18 and 19 at NASA's Langley Research Center, Building 1222 (Activities Center). The conference will be jointly sponsored by NASA-Langley, the Institute for Computer Application in Science and Engineering, and the George Washington University.

Data management has achieved maturity in areas such as airline reservations, parts inventory, personnel records and banking transactions. This capability, however, does not appear well-suited for managing the highly dynamic characteristics of data associated with engineering and scientific applications.

There is a pressing need to advance the technology for managing engineering and scientific data by providing a better understanding of its special requirements and by assessing current and future capabilities for its management.

This conference will provide a forum for discussing recent advances in the computer handling of engineering and scientific data. It will bring together the developers of the data management systems and the engineering and scientific users.

The conference begins at 8 a.m. on Tuesday with registration of participants. About 150 representatives from government and private industry are expected.

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National Aeronautics and
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RELEASE NO. 78-31

For Release:

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May 12, 1978

LANGLEY RESEARCH CENTER TO HONOR INVENTORS

Hampton, Va. -- Thirty-three Langley Research Center inventors will gather at a luncheon on Thursday, May 18, to recognize the Center's contribution to NASA's patent program during 1977. The luncheon will be at 11:30 a.m. in the Langley cafeteria private dining room (Building 1213).

Awards will be presented by Dr. Donald P. Hearth, Langley Director, and Dr. Howard J. Osborn, Langley Patent Counsel. Frederick J. Lees, Chairman of the NASA Inventions and Contributions Board, will be the guest speaker.

Dr. Clarence D. Cone, Jr., will be honored as the 1977 NASA Inventor of the Year. Dr. Cone, a former NASA cell and molecular biologist, is now with the Veterans Administration Center in Hampton. His invention concerned a process for controlling cell division.

Others receiving awards are: Joseph G. Thibodaux, Jr., for a method of making a solid propellant rocket motor; Wayne S. Slemp, for a particulate and solar radiation stable coating for spacecraft; Dr. Judd R. Wilkins, for a method of detecting the presence of microorganisms;

Harry V. Fuller, for a binocular device for displaying numerical information in a field of view; Vernon L. Alley and Austin D. McHatton, for an amplifying ribbon extensionmeter; Wilford E. Sivertson, Jr., for a method of locating people in distress; Daniel I. Sebacher and Alexander P. Sabol, for a solar hydrogen generator;

Dr. Robert C. Costen, for a vortex generator for controlling the dispersion of effluents in a flowing liquid; Theodore R. Creel, Jr., and Robert A. Jones, for an apparatus for determining thermophysical properties of test specimens; Dr. Judd R. Wilkins and Stacey M. Mills, for an automated single-slide staining device;

Mark R. Nichols, for a dual cycle aircraft turbine engine; Marvin D. Rhodes and Dr. Martin M. Mikulas, Jr., for a composite sandwich lattice structure; Oran W. Nicks, for an aircraft total energy sensor; Dr. Joseph S. Heyman, Jr., for a continuous wave ultrasonic bolt tensioning monitor; Ronald N. Jensen, for a solar heating system;

Dr. Robert S. Rogowski and Dr. Edward R. Long, Jr., for a thermoluminescent aerosol analysis; Lloyd S. Keafer, Jr., Ernest E.

Burcher and Leonard P. Kopia, for a transmitting and reflecting diffuser; Dr. Reginald J. Exton, for a TV fatigue crack monitoring system;

David B. Rhodes, for an optical scanner; Renaldo V. Jenkins and Alexander P. Sabol, for a rotary engine; George M. Dudley, for a mono-page paper distributor; Donald J. Progar, Dr. Vernon L. Bell, Jr., and Dr. Terry L. St. Clair, for polyimide adhesives; and George E. Dickerson, for a composite lamination method.

NASA News

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RELEASE NO. 78-34

For Release:

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July 12, 1978

POSTAL STAMP WILL HONOR VIKING MISSIONS

Hampton, Va.--The Viking missions to Mars will be commemorated by the issuance of a special postal stamp on Thursday, July 20, the second anniversary of the Viking 1 landing on Mars.

A First Day of Issue Ceremony, sponsored by the U.S. Postal Service and NASA's Langley Research Center, will begin at 11 a.m. in the Langley Activities Center.

A temporary post office will be established for the day at the Langley picnic area beside the Activities Center. The new Viking 15-cent stamp will be sold to the public and cancelled for collectors by Hampton postal workers. The temporary post office will be open from 8:30 a.m. to 5 p.m.

Langley Director Dr. Donald P. Heath will buy the first stamp.

The special Viking stamp will also be on sale July 20 at the Hampton Post Office, and national sales will begin Friday, July 21.

Principle speakers at the First Day of Issue Ceremony will be Carl S. Ulsaker, Senior Assistant Postmaster General, and James S. Martin, former manager of the Viking Project.

Hampton Postmaster George S. Hunt will preside at the 30-minute ceremony, and Langley Director Heath will welcome the public and introduce special guests.

The Viking stamp was designed by Robert T. McCall, well-known space artist, who has designed several other stamps with space themes. Two of his large murals are on display at the Air and Space Museum in Washington, D.C.

NASA will not have an official cachet for the Viking stamp, but several philatelic organizations and individual collectors will have their own cachets for sale during the day. A special area near the temporary post office will be set aside for these sales.

The two Viking spacecraft were launched toward Mars in August and September 1975. Viking 1's Lander craft touched down on Mars at 8:12 a.m. EDT on July 20, 1976, and the Viking 2 Lander reached the planet's surface at 6:59 p.m. EDT on September 3, 1976.

During the primary mission, which ended in November 1976, the Landers and their two partner Orbiter spacecraft conducted experiments in 13 scientific disciplines.

A reduced Viking mission was extended until May 1978 to continue gathering information on Mars' weather, seasonal variations, soil characteristics, and other scientific aspects. A further reduced mission will continue through February 1979, controlled from the Jet Propulsion Laboratory in Pasadena, California.

More than 30,000 photographs of the planet, from the surface and from orbit, have mapped most of Mars with high-resolution photos and revealed much valuable information to scientists.

NASA News

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RELEASE NO. 78-35

For Release:

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July 13, 1978

GODFREY SELECTED FOR MANAGEMENT FELLOWSHIP AT HARVARD

Hampton, Va.--Frank E. Godfrey, Contract Specialist with the National Aeronautics and Space Administration, Langley Research Center, has been selected to participate in the Education for Public Management Program at Harvard University in the John F. Kennedy School of Government. Godfrey is one of three NASA employees chosen for the highly competitive program.

The Education for Public Management (EPM) Program is an important element in the Federal Government effort to develop promising mid-careerists' talents and abilities for effective executive and management performance in the public sector. The program is designed to serve the training and development needs of individuals who are at mid-career and who have been identified by their agencies as having the potential to assume increasing responsibility in the overall direction of agency programs and policies. Participants for the program are selected from numerous federal agencies.

Godfrey, a member of the Projects and Services Contracting Branch, has been at Langley since 1974. He earned his undergraduate degree (summa cum laude) in business administration from Saint Augustine's College in Raleigh, North Carolina, in 1967. He spent two years in the U.S. Army and upon discharge pursued and was awarded a masters degree in business administration from Texas Southern University, Houston, Texas, in 1971. While working at Hampton Institute in the Business Office, he instructed on a part-time basis in the Business Department. He is presently on the Adjunct Faculty of St. Leo College.

The 33-year-old recipient is active in civic affairs, having served as a Loaned Executive to the 1977 Peninsula United Fund Campaign; a member of the National Alliance of Businessmen's Youth Motivation Task Force Team; assistant coach to the King Street Community Center Youth Football Program; Associate Director of the Small Business Development Center at Hampton Institute; and participates in Little League, Boy Scouts, and church activities.

Godfrey will be accompanied to Harvard by his wife, Andrea, and their three children, Frank, Marlin, and Shannon.

NASA News

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RELEASE NO. 78-36

For Release:

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July 14, 1978

STUDENTS RECEIVE VIKING GRANTS FOR RESEARCH PROJECTS

Hampton, Va.--Ten grants, totaling \$5,000 for the support of research projects in planetology and astronomy, have been awarded to eleven students by the scientists of NASA's Viking Project.

The money is part of the annual Newcomb Cleveland Award, presented by the American Association for the Advancement of Science last February to 150 scientists who participated in the Viking landings on Mars.

"In selecting these proposals, we are expressing a belief that these students can make a noteworthy contribution to the fields of planetology and astronomy," said Dr. Gerald A. Soffen, former chief of the Viking scientists.

Dr. Soffen and Cary R. Spitzer, Viking Project Deputy Manager, selected the ten winners from among 71 proposals submitted by college and high school students from the United States and several foreign countries.

No time limit is set for completion of the projects, but brief progress reports will be made periodically to the Viking Project Office.

As each project is completed, a brief article will be prepared for publication in an appropriate scientific magazine or journal.

Winners of the student grants are:

Kenneth W. Jeffreys, Springfield, Mo., received \$900 to observe and analyze eclipsing binary systems. Jeffreys is a student at Southwest Missouri State University in Springfield.

Sandy F. S. Chun, La Canada-Flintridge, Calif., received \$750 to study photocatalytic oxidation of organic compounds. Chun is a student at Pomona College, Claremont, Calif.

Michael J. Matheson and August Ochabauer, Palatine, Ill., received \$665 to perform a chemical and petrographic analysis of the Plainview meteorite. They are students at Harper College in Palatine.

Robert Shaw, Los Angeles, Calif., received \$600 to study selection effects concerning supernova detection. Shaw is an astronomy student at the University of Southern California in Los Angeles.

David C. Jewett, Hertfordshire, England, was awarded \$500 to construct an apparatus to observe transient lunar phenomena. Jewett is a student at University College in London.

Richard P. Binzel, St. Paul, Minn., received \$500 to perform studies in photoelectric photometry. Binzel is a student at McAlester College in St. Paul.

Mark Selover, Shaker Heights, Ohio, will use his \$450 grant to construct a low-cost radio telescope. He graduated in June from Shaker Heights Senior High School.

Sam S. Mims, Baton Rouge, La., will use his \$235 grant to compare color index with brightness variations in asteroids. Mims is a student at Louisiana State University in Baton Rouge.

Carter B. Emmart, Demarest, N.J., will study stellar ultraviolet, blue and visible photometry with his \$200 grant. Emmart is a student at Northern Valley Regional High School.

Seth S. Horowitz, Scarsdale, N.Y., received \$200 to perform space technology studies in the area of magnetohydrodynamics. He graduated in June from Scarsdale High School.

NASA News

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RELEASE NO. 78-38

For Release:

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July 24, 1978

ROLLS ROYCE OFFICIAL TO SPEAK TO NASA EMPLOYEES

Hampton, Va.--Dr. Peter Calder, project director for the Olympus 593 engine at Rolls Royce Limited, Bristol, England, will be the guest speaker for the Langley Research Center colloquium on July 31. Held in the Activities Center (Building 1222), there will be a coffee at 2 p.m. and the lecture will be at 2:30 p.m.

Calder's talk is entitled, "Engine Options for Supersonic Cruise Aircraft." He will discuss the Olympus 593 twin spool turbojet engine, produced by Rolls Royce in Britain and SNECMA in France, which powers the Concorde aircraft. He will give the highlights in the development of the engine and its inlet and discuss some possible modification to improve the propulsion system operating efficiency and environmental acceptability.

Concorde supersonic passenger services from Paris and London to South America and the Middle East commenced nearly two and a half years ago and were extended to North America two years ago, initially to Washington, D.C. and then to New York.

NASA News

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RELEASE NO. 78-41

For Release:

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August 10, 1978

DRAPER LABORATORY AWARDED NASA COMPUTER CONTRACT

Hampton, Va.--The Charles Stark Draper Laboratory, Inc., Cambridge, Mass., has been awarded a NASA contract to develop an engineering model of a Fault-Tolerant Multiprocessor (FTMP) computer.

Under a previous NASA-sponsored effort, the FTMP computer concept as conceived by the Draper Laboratory was identified as a viable candidate for use in safety critical avionic and flight control systems of future civil transport aircraft.

The FTMP will be able to start up and operate several aircraft function applications without manual intervention. These functions include flight control; autopilot; navigation and guidance; and display and master alarms. In addition, the FTMP will be able to assess aircraft flight phases, such as takeoff, climb, cruise, descent and landing.

The contractor has estimated the value of this contract to be approximately \$1.8 million. The work will be performed over a period of two and one-half years at the contractor's facility in Cambridge.

This contract will be managed by NASA's Langley Research Center in Hampton, Va.

NASA News

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RELEASE NO. 78-42

For Release:

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August 10, 1978

SRI INTERNATIONAL AWARDED NASA COMPUTER CONTRACT

Hampton, Va.,--SRI International Menlo Park, Calif., has been awarded a NASA contract to develop an engineering model of a Software-Implemented Fault Tolerance (SIFT) computer.

The SIFT computer concept, as conceived by SRI under a previous NASA-sponsored effort, has been identified as a viable candidate for use in safety critical avionic and flight control systems of future civil transport aircraft.

The SIFT will be capable of starting up and performing several aircraft function applications without manual intervention. These functions include flight control; autopilot; navigation and guidance; and display and master alarms. In addition, the SIFT will be able to assess aircraft flight phases, such as take off, climb, cruise, descent and landing.

SRI International has valued this contract at approximately \$1.6 million. The work will be performed during a 2-year period at the SRI facility in Menlo Park and at a subcontractor's facility in Teterboro, New Jersey.

This contract will be managed by NASA's Langley Research Center in Hampton, Va.

NASA News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23665
AC 804 827-3966

RELEASE NO. 78-45

For Release:

Karen Miller
(804) 827-2934

September 8, 1978

BIOLOGIST TO SPEAK ABOUT HUMAN AGING

Hampton, Va. --Ponce de Leon made a valiant effort, but he never did find the fountain of youth. Each of us grows older every day.

On Monday, September 18, Dr. Leonard Hayflick will speak on "The Biology of Human Aging," as part of the Langley Research Center colloquium series. Held in the Activities Center (Building 1222), there will be a coffee at 2 p.m. and the lecture will begin at 2:30 p.m.

Dr. Hayflick is Senior Research Cell Biologist at Children's Hospital Medical Center of Northern California, Bruce Lyon Memorial Research Laboratory, Oakland, California.

According to Hayflick, the ability of the human body to maintain itself is manifested from the large-scale immune and endocrine systems down to the cellular level. This self-maintenance ability is highly adaptive to man's environment, as exemplified by the astronauts' biological responses to sustained zero-g environments.

However, the remaining fundamental question is why this self-maintenance ability "wears out," resulting in the aging process and eventually death. Can the biological clock be altered and would it be desirable to do so?

Hayflick will consider the aging process from both a demographic and biological point of view. Recent studies revealing the finite capacity of normal cells to divide will be reviewed. After an introduction to the principles of cell-culture technology and its implications, Hayflick will present some modern theories of the causes of the aging process.

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Karen Miller
(804) 827-2934

September 12, 1978

PATTON TO RECEIVE TEST PILOT AWARD

Hampton, Va. --James M. Patton, Jr., Head of the Pilots' Office at NASA's Langley Research Center, will be presented the Iven C. Kincheloe Award at the Annual Symposium of the Society of Experimental Test Pilots in Los Angeles on September 30. This award is in recognition of his professional accomplishment in the initiation, formulation, and conduct of the NASA comprehensive general aviation stall/spin flight research program.

Patton was nominated for the award by John P. Reeder, Chief of Langley's TCV Program Office, and a Society Fellow. In his nomination, Reeder noted, "During the [stall/spin] program formulation, Mr. Patton provided invaluable leadership and technical guidance to establish flight safety procedures and ensure a rational and productive flight research program. As a result of his efforts, Langley Research Center has established a stall/spin flight test facility, procedures, and equipment which provides the most sophisticated system to date for general aviation stall/spin research."

He continued with, "Patton's outstanding attributes as an engineer test pilot are exhibited by the precision with which he conducts the flights (his control inputs are specific, precise and repeatable); by his ability to analyze spin motions during flight tests and relate to experiences of other flights; and his consistent ability to obtain, with a limited performance airplane and established safety procedures, the maximum amount of spin test data from each flight. To date, about 398 individual programmed spin tests for a total of about 2,679 turns have been successfully completed."

Patton has been in his present position since 1968; he began his NASA career in April 1966 as a Research Pilot. Prior to joining NASA, he was an Engineering Test Pilot with the Federal Aviation Administration from 1958 to 1966. From 1956 to 1958, he was a Flight Test Engineer with Chance Vought in Dallas, Texas. He served in the U. S. Navy from 1946 to 1953 where he held the rank of Lieutenant Commander.

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For Release:

Karen Miller
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September 19, 1978

SLAYTON TO SPEAK ON OCTOBER 5

Hampton, Va. -- Dr. Donald K. "Deke" Slayton will be the guest speaker on October 5 for the NASA-Langley Research Center colloquium lecture and the "Our Future in the Cosmos" public lecture. His talks will commemorate the 20th anniversary of NASA.

Slayton is Orbital Flight Test Manager for the Space Shuttle Project Office at NASA's Johnson Space Center and a veteran astronaut.

The colloquium lecture, entitled "The Space Shuttle," will be held in the Langley Activities Center (Building 1222) from 2 to 3 p.m. An informal discussion period will follow.

The public lecture, entitled "Manned Space Flight: Past Triumphs, Future Challenges," will be at 8 p.m. at the Hampton Coliseum. This is the first lecture in the 1978-79 "Our Future in the Cosmos" series, sponsored by the Langley Research Center and the College of William and Mary. Free tickets for this lecture may be obtained by calling the William and Mary

Office of Special Programs at 877-9231, ext. 200, prior to October 1. After that date, tickets will be available at the Coliseum box office.

Slayton was one of the original seven astronauts selected for Project Mercury in 1959, and is the only one still active in the space program. He served as chief astronaut and as Director of Flight Crew Operations prior to going into space in July 1975 as a member of the historic Apollo-Soyuz Test Project. This 217-hour mission included 44 hours of joint docked activities and four crew transfers.

Prior to his NASA career, Slayton was an officer and pilot in the U. S. Air Force from 1943 to 1963. He flew 63 combat missions as a B-25 pilot in World War II and later became a test pilot at Edwards Air Force Base in California.

The many honors Slayton has received include three NASA Distinguished Service Medals, a NASA Exceptional Service Medal, the Collier Trophy, the AIAA Haley Astronautics Award and two honorary doctorates.

NASA News

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RELEASE NO. 78-48

For Release:

Maurice Parker
(804) 827-2934

September 22, 1978

HEYMAN WINS THIRD IR-100 AWARD

A physicist at NASA's Langley Research Center has been selected for a third IR-100 award by Industrial Research magazine for helping develop one of the 100 most significant new technical products of 1978.

Dr. Joseph S. Heyman was presented his award at a banquet in Chicago on September 21. This is the first time that a single individual has been selected three times by the magazine for research work. Heyman's previous awards were in 1974 and 1976.

The 1978 device, jointly developed at Langley and at Washington University in St. Louis, is called an acoustoelectric transducer. It greatly improves the accuracy of measuring the exact properties of various materials with very high-pitched sound waves.

The advantage of the acoustoelectric transducer over conventional transducers is its insensitivity to the shape of sound waves. New information provided by the device will allow researchers to more accurately

identify and evaluate material flaws and to characterize biomedical specimens and tissue.

Research on the Acoustoelectric transducer was conducted by Dr. Heyman, of Langley's Instrument Research Division, and by Dr. James G. Miller, professor of physics, and Lawrence J. Busse, research physicist, both of Washington University's Laboratory for Ultrasonics.

Heyman's research concentrated on the measurement of materials, while Miller and Busse studied the medical applications of the new device.

Heyman's first IR-100 award, presented in 1974, was for the development of a medical monitoring device. Called a continuous wave ultrasonic microemboli monitor, it is an ultrasonic instrument that monitors impurities in a patient's blood during open-heart surgery.

This instrument, compact in size, easy to operate and relatively cheap, was also jointly developed by Heyman and researchers at Washington University.

In 1976 Heyman won his second IR-100 award for the development of an ultrasonic bolt stress monitor. It measures the strain in bolts with an ultrasonic instrument that can indicate changes in bolt strain to better than one part in 10,000. The bolt monitor is portable, easy to use, inexpensive, and extremely accurate.

The 100 winning 1978 new products are being displayed for several weeks at Chicago's Museum of Science and Industry for engineers, scientists, educators, and the general public.

NASA News

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For Release:

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(804) 827-2934

September 22, 1978

NASA AND U. S. ARMY TO ACCEPT ROTOR SYSTEMS RESEARCH AIRCRAFT

Hampton, Va. -- The first Rotor Systems Research Aircraft (RSRA) will be accepted by the National Aeronautics and Space Administration (NASA) and the U. S. Army Aviation Research and Development Command (AVRADCOM) on September 28 in a ceremony at NASA's Wallops Flight Center, Wallops Island, Virginia. The ceremony will be held at 2:30 p. m. at Hangar N-159 on the Wallops Main Base.

Sikorsky Aircraft Division, United Technologies Corporation, is developing two RSRA for NASA and the U. S. Army. The project has been jointly managed and funded by NASA and the Army Structures Laboratory (AVRADCOM) at Langley Research Center, Hampton, Virginia since November 6, 1973.

The acceptance ceremony marks the completion of the design, fabrication, and flight testing of RSRA number two, which will be delivered to

the Government in the helicopter configuration. The number one RSRA is scheduled for acceptance by the Government after completion of flight testing in the compound configuration.

The RSRA will provide the United States with a highly sophisticated and much needed research facility for continued development and understanding of rotary wing technology. The RSRA helicopters will be used by NASA and the Army to provide data for technology verification and to investigate and evaluate a wide variety of existing and advanced rotor systems. The RSRA will help eliminate the costly practice of having to develop or extensively modify helicopter aircraft in order to conduct flight investigations for each promising new rotor and provide precise measurements of a variety of rotors under repeatable test conditions.

The RSRA are unique aircraft which have the first helicopter crew emergency escape system, an active isolator/balance system, and can be configured as a helicopter, a compound aircraft (helicopter with fixed-wings), and fixed-wing aircraft.

The emergency escape system provides for severance of the main rotor blades, separation/fragmentation of the canopies and sequenced upward extraction of the crew using tractor rocket motors. Being comprised solely of mechanical and pyrotechnic components, this system is insensitive to electromagnetically-induced radiation and lightning.

The active isolator/balance system provides wide-band attenuation of vibrations to the fuselage from main rotor vibratory forces and moments. This wide-band attenuation enables different rotors to be installed on the RSRA without retuning the fuselage. The system achieves vibration isolation by using hydraulic-pneumatic units to connect the main rotor gear box to the fuselage.

Speakers at the acceptance ceremony will be Major General Story C. Stevens, Commanding General, U. S. Army Aviation Research and Development Command; Dr. James J. Kramer, Associate Administrator, Office of Aeronautics and Space Technology, NASA; Mr. Robert F. Daniell, Sikorsky Executive Vice President for Engineering and Programs; Dr. Donald P. Heath, Director, Langley Research Center; and Dr. Robert L. Krieger, Director, Wallops Flight Center.

NASA News

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RELEASE NO. 78-51

For Release:

Karen Miller
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September 28, 1978

LANGLEY ENGINEER SELECTED FOR PRESIDENTIAL EXCHANGE

Hampton, Va. -- Dr. Larry D. Pinson, an aerospace engineer in the Structures and Dynamics Division at NASA's Langley Research Center, is among a select group of mid-career executives chosen to participate in the President's Executive Interchange Program.

The program is designed to foster improved relations between the government and private industry. Fifty to seventy-five middle management executives from both sectors are selected each year. Each executive spends a year in the opposite sector gaining in-depth, on-the-job experience.

Pinson began his one-year-term with the Aerospace Corporation in Los Angeles, Calif., in August.

"The program provides the nation with a cadre of promising individuals in both sectors who can be called upon in later years for government advisory posts and important appointive posts," according to Lee Cassidy,

Executive Director of the President's Commission on Personnel Interchange, which administers the program.

The 67 men and women selected for this year's program bring the total to over 450 executives who have participated in the Interchange Program since it was established by President Lyndon B. Johnson.

Pinson holds bachelor and master degrees in civil engineering from the University of Kentucky, Lexington. He earned his Ph. D. in engineering mechanics from the Virginia Polytechnic Institute and State University. He began his NASA career at the Langley Research Center in 1963. Pinson has received several awards for work on vibrations of space vehicles and, during the Apollo program, he was a consultant on various flight problem studies.

Pinson and his wife, Sarah, and their three children are residents of Poquoson.

NASA News

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RELEASE NO. 78-52

For Release:

Keith Koehler
(804) 827-2934

September 29, 1978

ASTRONAUT PRESENTS PORTRAIT TO LIBRARY

Hampton, Va. -- Dr. Donald K. "Deke" Slayton will present a portrait of Virgil I. (Gus) Grissom to the Grissom Library, 366 De Shazor Dr., Newport News, at 5:15 p.m. October 5. The portrait will be on loan from NASA.

Grissom and Slayton were among the seven original astronauts selected by the National Aeronautics and Space Administration in 1959. Both men trained and worked at the Langley Research Center during the Mercury program.

The library was named in honor of Grissom in August 1961 after his historic flight as pilot of the Mercury-Redstone 4 (Liberty Bell 7) sub-orbital mission. The library, opened in 1961, was housed in the old Denbigh Courthouse until 1977, when a new building was completed.

Grissom, who lived in Stoneybrook Estates from 1959-62, kept in close touch with the library by working with the children's summer reading programs.

Grissom was killed in January 1967 with Edward H. White, II and Roger B. Chaffee in an accident inside an Apollo spacecraft during tests at the Kennedy Space Center, Fla.

Slayton, Orbital Flight Test Manager for the Space Shuttle Project Office at NASA's Johnson Space Center, will give a lecture entitled "Manned Space Flight: Past Triumphs, Future Challenges" at 8 p.m. October 5 at the Hampton Coliseum.

This is the first lecture in the 1978-79 "Our Future in the Cosmos" series, sponsored by Langley and the College of William and Mary.

NASA News

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For Release:

Keith Koehler
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September 29, 1978

TECH HOUSE REOPENS OCTOBER 1

Hampton, Va. --The Technology Utilization House (Tech House) at NASA's Langley Research Center will reopen to the public October 1.

Public tours will be given every 15 minutes from noon to 4:30 p.m. on Sundays and from 8 a.m. to 4:30 p.m. Monday through Saturday.

Each tour will include a talk by a tour guide on the home's various energy saving systems. This briefing will include some demonstrations of equipment. In the garage will be displays that explain the results of the recent "live-in test" as well as how some of the more unique systems operate.

The Tech House is a one-story, three-bedroom, contemporary style house equipped with unconventional technical systems designed to save energy and water. Much of the equipment is now available, or will be in the next few years, to the average homeowner.

The Tech House is located next to the Visitor Center.

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RELEASE NO. 78-55

For Release:

Karen E. Miller
(804) 827-2934

October 2, 1978

CONTROL DATA CORPORATION AWARDED NASA CONTRACT

Hampton, Va. --The Control Data Corporation, Minneapolis, Minnesota, has been awarded a NASA contract for the maintenance of the Langley Research Center computer complex.

The Langley computer complex consists of computer systems and auxiliary devices which provide scientific data processing in support of the Center's research programs. It is operated on an open-shop basis for scientific, engineering, and other technical personnel performing analytical studies, experimental data reduction, and real-time simulations. All segments of the Langley research community use the computer complex capabilities and it is vital to the progress of the Center's mission.

The basic contract covers a period of two years, which the contractor has valued at approximately \$4.3 million. There are also three one-year priced option periods, bringing the corporation's estimate of the total contract up to approximately \$11.5 million.

Work under this contract began on September 28, 1978. NASA's Langley Research Center is managing the contract.

NASA News

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RELEASE NO. 78-56

For Release:

Karen Miller
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October 3, 1978
3 p. m.

MERCURY AWARDED NASA CONTRACT

Hampton, Va. --The Mercury company of Tustin, California, has been selected for negotiation, leading to the award, of a NASA contract to implement a "Pressure Systems Certification/Recertification and Configuration Management Program" at NASA's Langley Research Center.

This program will provide for the engineering evaluation of ground based pressure systems to continue the assurance of a safe working environment and to potentially extend the operating capabilities of unique, high energy, research facilities at the Center.

The in-service inspection and certification of these pressure systems will be performed in accordance with agency guidelines established by the NASA Office of Safety and Environmental Health. In addition, this program will provide for continuation of the existing Configuration Management Program for the Center's research facilities. This activity

provides for the technical evaluation of future changes to facilities to assure adequate safety provisions and exercises administrative control of all affected documentation.

Mercury has estimated the value of the basic 2-year contract to be approximately \$1.15 million. They have valued the 1-year priced option at approximately \$637,000. The contract also has two 1-year unpriced options.

Work under this contract will begin about November 1, 1978, under the management of NASA's Langley Research Center.

NASA News

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RELEASE NO. 78-58

For Release:

Karen Miller†
(804) 827-2934

October 10, 1978

OCEAN ENGINEER TO SPEAK TO NASA EMPLOYEES

Hampton, Va. -- Dr. Jerome H. Milgrim, professor in the Ocean Engineering Department at the Massachusetts Institute of Technology (MIT), will be the guest speaker for the NASA Langley Research Center colloquium lecture on October 16. The lecture will be held at 2 p.m. in the Activities Center (Building 1222).

Milgrim's talk, entitled "Hydrodynamics and Performance of Sailing Vessels," will center on our present-day ability to predict hydrodynamic forces on hulls and aerodynamic forces on sails. The subject is controversial among sailors and the presentation will include theoretical fluid mechanics, model testing and full-scale testing. Computer modeling will be considered and areas requiring improved predictive capability will be examined.

Milgrim holds a Ph. D. from MIT in hydrodynamics, as well as degrees in naval architecture, marine engineering and electrical .

engineering. In addition to his teaching duties, he has extensively supervised research in ocean oil slick mechanics and control. Outside of his academic duties, he is a consultant to boat rigging and sail manufacturers, navigation instrument manufacturers, the oil slick barrier device industry and the Attorney General Offices of several States.

Milgrim is a member of numerous panels that deal with ocean oil pollution. He has written many articles on boat design in yachting journals and is best known in the sailing community for his revolutionary design of the vessel called Cascade.

NASA News

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RELEASE NO. 78-57

For Release:

Karen Miller
(804) 827-2934

October 10, 1978

NASA VISITOR CENTER AND TECH HOUSE CLOSING

Hampton, Va. --The Visitor Center and Technology Utilization House at NASA's Langley Research Center will be closed on Saturday and Sunday, October 14 and 15. Maintenance on an electrical substation will require that power be turned off in these facilities these days.

The Visitor Center and Tech House will reopen on Monday, October 16, with hours of 8:30 to 4:30 (Monday - Saturday) and 12 noon to 4:30 on Sunday.

NASA News

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RELEASE NO. 78-59

For Release:

Keith Koehler
(804) 827-2934

October 6, 1978

NASA EMPLOYEES SELECTED FOR CAREER DEVELOPMENT PROGRAM

Hampton, Va. -- Three NASA Langley Research Center employees have been selected for the 1978-79 Career Development Program at NASA Headquarters, Washington, D. C.

Dr. Earl K. Huckins III, Thomas E. Pinelli, and Fred B. Beck will take part in the program designed to assist National Aeronautics and Space Administration field centers by developing potential supervisors and managers at all levels.

Huckins, assigned to the Materials and Structures Division, Office of Aeronautics and Space Technology, is working on the planning and implementation of the Large Space Structures Technology Program for next year.

A native of Newport News, Va., Huckins was a student trainee at Langley from 1962 to 1966. He came to work at Langley in 1969 and worked in the areas of spacecraft dynamics and atmospheric

circulation modeling from 1969 to 1974. In 1974 he was assigned to Langley's Space Systems Division where he worked on the Long Duration Exposure Facility (LDEF) project.

Huckins is a graduate of Warwick High School, Newport News. He received his Bachelor of Science degree in aerospace engineering from Virginia Polytechnic Institute and State University (VPI & SU), his Master's degree in mechanical engineering from North Carolina State University and his Ph. D. in aerospace engineering from VPI & SU.

Huckins is the son of Mr. and Mrs. Earle K. Huckins, Jr., Newport News.

He presently lives in Annandale, Va., with his wife the former Cathy Lassiter and children: Christine, Scott and Brian.

Pinelli, assigned to the International Affairs Division, Office of External Relations, is serving as a Project Officer to help plan and operate cooperative space and scientific programs between NASA and foreign countries.

He is Assistant to the Chief, Scientific and Technical Information Programs Division at Langley. He was appointed to the position in 1975.

Pinelli began his NASA career in 1974 as an Administrative Operations Specialists at Langley. From 1972 to 1974 he was on loan to NASA

through the Intergovernmental Personnel Act from the Virginia Beach Public School System, as Assistant to the Center Educational Programs Officer.

Pinelli received his Bachelor of Science degree in secondary education from Old Dominion University in 1970. He holds three Master's degrees in education and public administration from Clemson, Old Dominion and Golden Gate Universities.

He is the son of Mr. and Mrs. A. E. Cralle, Jr., Prospect, Va.

Pinelli is a resident of Virginia Beach, Va.

Beck, assigned to the Environmental Observation Division, Office of Space Terrestrial Applications, is assisting the Manager, Environmental Quality Program in the development and implementation of a comprehensive NASA Water Quality Program.

At Langley, Beck is an Electrical Engineer in the Electronics Division. Since beginning his NASA career at Langley in 1962, Beck has served as a microwave research engineer, a staff assistant to the Director of Electronics and as a member of the SeaSat-A scatterometer team.

Beck is a graduate of Spartanburg High School, Spartanburg, S. C. He received his Bachelor of Science degree in electrical engineering from the University of South Carolina and his Master's degree in electrical engineering from George Washington University.

Beck is the son of Mr. and Mrs. W. T. Beck, Sr., Spartanburg,
S. C.

He and his wife, the former Judy Porter, and their child, Cammie
Lynn, are residents of Hampton, Va.

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RELEASE NO. 78-61

For Release

Karen Miller
(804) 827-2934

October 17, 1978

NASA CEREMONY HONORS 30-YEAR SERVICE EMPLOYEES

Hampton, Va.--A service awards ceremony honoring 30-year service employees will be held at NASA's Langley Research Center on October 23, at 1:30 p.m. in the Activities Center, Building 1222.

Dr. Donald P. Heath, Langley Director, will present service emblems and certificates to the following employees:

Systems Engineering Division: Hubert K. Clark; Walter M. Cook, Jr.;

Operations Support Division: Meredith W. Ballard; Calvin C. Berry; John S. Carmines; Dale W. Dalin; Cecil A. Field; Dale A. Gwaltney; Albert B. Insley; Charles S. Kaiser; Jesse L. Kent; Maurice L. Laughlin, Jr.; Charles L. White; Charles W. Wiggs, Jr.; Howard R. Williams, Jr.;

Fabrication Division: Raymond G. Cerny; Osborne F. Davis; Leroy Jones; Hale H. Marshall; B. T. McAlexander, Jr.; Kenneth L. Quinn; Howard L. Thomas; John W. Whitmore; Preston L. Zember;

Research Facilities Engineering Division: John L. Hudson, Jr.; Vinton T. Land; James R. Wallis, Jr.; Carroll A. Williams, Jr.;

Plant Engineering Division: James R. Martin; Cleveland Slade;

Flight Dynamics and Control Division: James J. Adams;

Flight Electronics Division: Harry W. Compton; Seldon B. Gilliland, Jr.; Floyd E. Rankin; Henry J. E. Reid, Jr.; Kazmere C. Romanczyk;

Instrument Research Division: Bruce Flagge; Edward F. Germain; James M. Harris; Herbert R. Henderson; Mallory S. James; John B. Tyndall; Paul H. Wooddell;

Analysis and Computation Division: Charles I. Hahn;

Terminal Configured Vehicle Program Office: James R. Hall;

Subsonic-Transonic Aerodynamics Division: Percy J. Boblitt; James S. Bowman, Jr.; Lysle P. Parlett;

High-Speed Aerodynamics Division: James M. Cubbage, Jr.; Sue W. Souders;

Aeronautical Systems Division: Cornelius Driver; David E. Fetterman, Jr.; Harry H. Heyson;

Flight Research Division: Robert J. Tapscott;

Projects Technical Operations Division: Edmund A. Brummer;

Projects Management Systems Division: Beulah B. Elliott; William L. Gaster; Melvin Morris, Jr.;

Scout Project Office: Ralph P. Parks; Ballard E. Quass;

Financial Management Division: Louise S. Anderson;

Scientific and Technical Information Programs Division: Wesley T. Berryman, Jr.; Helen B. Mulcahy;

Management Support Division: Nava B. Brooks; Grace C. Sain;

Procurement Division: James F. Eareckson;

Personnel Division: James J. Fay;

Structures and Dynamics Division: Perry W. Hanson; Robert W.

Herr; Sumner A. Leadbetter; Irving Weinstein;

Space Systems Division: Jim J. Jones;

Office of the Director: John E. Duberg; Barbara W. Hogge;

Office of External Affairs: Agnes W. Dunkley;

NASA News

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RELEASE NO. 78-62

For Release:

Karen E. Miller
(804) 827-2934

October 17, 1978
3 p.m.

DOUGLAS AIRCRAFT COMPANY CONTRACT MODIFIED

Hampton, Va.--The Douglas Aircraft Company, McDonnell Douglas Corporation, of Long Beach, California, has been awarded a modification to their NASA contract entitled "Evaluation of Laminar-Flow Control System Concepts for Subsonic Commercial Transport Aircraft."

This contract involves engineering investigations, analyses, design studies, and component testing to evaluate alternatives in the design of laminar-flow control subsonic commercial transports for the early 1990's time period.

This modification will permit more complete exploration of promising design alternatives and will allow structural concepts to be more fully evaluated. This effort should be completed by late 1979.

The modification includes an option to conduct a feasibility study concerning the use of a representative transport aircraft for leading edge systems testing and full wing chord laminar flow control flight testing.

The Douglas Company has valued this modification at approximately \$1 million (including the option). The contract is managed by NASA's Langley Research Center.

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RELEASE NO. 78-64

For Release:

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October 25, 1978

RIGGINS COMPANY SELECTED FOR CONTRACT NEGOTIATION

Hampton, Va.--The Riggins Company, Inc. of Hampton has been selected for negotiation, leading to the award, of a NASA contract to provide materials and services for the construction of the National Transonic Facility (NTF) at NASA's Langley Research Center.

The NTF is a unique national laboratory that will help the United States maintain its leadership in commercial and military aircraft, including development of technology for future energy-efficient transport planes. The NTF is a new wind tunnel concept which makes possible the use of temperatures as low as 300 degrees below zero F. to better simulate the airflow over airplanes at full-scale flight conditions.

The work required under this contract includes providing liquid nitrogen, gaseous nitrogen, cooling water, and air and vacuum piping systems. These items are required to provide the proper wind tunnel test environment.

Riggins Company has estimated the value of this contract to be approximately \$2.9 million. The work is to be completed by late 1981.

The contract will be managed by NASA's Langley Research Center.

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RELEASE NO. 78 -65

For Release:

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October 30, 1978

BOEING COMPANY AWARDED NASA CONTRACT

Hampton, Va. --The Boeing Commercial Airplane Company, Seattle, Washington, has been awarded a NASA contract for the development and evaluation of selected advanced aerodynamics and active controls concepts for commercial transport aircraft.

This contract represents the Boeing Company's part of the second phase of Energy Efficient Transport (EET) work which began in early 1977 under two NASA contracts. This second phase concentrates on further development and evaluation of promising concepts for improved energy efficiency and operational economy for subsonic, long-haul commercial transport aircraft.

Concepts to be studied include wing tip extension and/or winglets, surface coatings for drag reduction, wing load alleviation systems and active controls/guidance systems.

The Boeing Company has estimated the value of this contract to be about \$17 million. The cost will be shared, with the Government providing approximately \$15 million and the contractor providing approximately \$1.7 million.

This contract covers a period of four years. It will be managed by NASA's Langley Research Center.

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RELEASE NO. 78-66

For Release:

Karen Miller
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November 1, 1978

NASA HONORS EMPLOYEES AT AWARDS CEREMONY

Hampton, Va.--Dr. Alan M. Lovelace, NASA Deputy Administrator, will be the guest speaker for the Annual Honor Awards ceremony at NASA's Langley Research Center on Thursday, November 9. The ceremony will be held at 2:30 p.m. in Building 1244 (Hangar).

Langley Awards will be presented to the following:

Forty Years' Service: John W. Quinn, John P. Reeder, Lamar E. Williams.

Thirty-Five Years' Service: Kenneth D. Albert; Frances M. Arnn; Jack E. Ashe; Carl G. Baab; George F. Black; Robert W. Boswinkle; Everett S. Browne; Thomas D. Carpini; James N. Chacamaty; Clyde E. Clark; Arthur C. Combs; William E. Craig, Jr.; James H. Daus; Jack H. Dysart; William C. Edwards; Fred F. Eichenbrenner; M. Lawrence Emory; Thomas E. Ezell, Jr.; Walter J. Felker;

Richard R. Heldenfels; Beverly Z. Henry, Jr.; Benjamin F. Holloway; Edward A. Howe; Estel W. Hughes; Joseph A. Italiano; Robert L. Kenimer;

Cora B. Laprade; James H. Link; Moses J. Long; Donald L. Loving;
 Edwin A. McErlean; M. Eloise McGehee; Dwight G. McSmith; George L.
 Meidinger; William W. Metz; Charles W. Miller; Robert F. Montgomery;
 John A. Moore; James N. Mueller; Chester A. Oss; Marvin V. Owens;

Lee D. Parker; Stanley E. Pearson; Kathryn H. Peddrew; Kermit G.
 Pratt; Stanley Press; Warren J. Price; Robert M. Revere; John Samos;
 Robert O. Schade; Stanley H. Scher; Ferdinand W. Schmidt; O. Earl
 Shortt; Harold R. Snyder; Earl F. Stahl; Manuel Stein; James E.
 Stitt; Byrdie Terry, Jr.; George E. Theil; Doris R. Topping; Thomas
 Vranas; Evelyn D. Wallace; Richard T. Whitcomb; C. Wayne Williams;
 Edwin F. Williams; Duane C. Zellers.

Technology Utilization Award: John D. Buckley; Billy B. Dancy
 and John D. Thompson.

Equal Employment Opportunity Award: Edward A. Howe; Marvin D.
 Rhodes.

Outstanding Volunteer Service Award: George C. Salley.

Public Service Award: George D. Allison and Charles M.
 Benjamin; Geraldine C. Darden; Charles W. Swain.

H. J. E. Reid Award: Richard T. Whitcomb.

Special Achievement Awards for Contributions: Alvin F. Anderson;
 Billy R. Ashworth; James E. Bartlett; Robert C. Costen; Chris Gross;
 Beverly Z. Henry; Anthony Jalink, Jr.; Mary T. Lemke; Raymond C.
 Montgomery; S. Paul Pao; Tony L. Parrott; Werner Pfenninger; Welton B.
 Pollard; Wilmer H. Reed III; Joseph W. Stickle; Robert L. Trimpi;
 William C. Walton, Jr.

Nineteen Group Achievement Awards will also be presented.

NASA Headquarters Awards will be presented at the Langley ceremony as follows:

Outstanding Leadership Medal: John P. Reeder

Exceptional Scientific Achievement Medal: Robert H. Tolson

Exceptional Service Medals: Lula R. Agee; Thomas D. Carpini; Joseph L. Johnson, Jr.; Austin D. McHatton; F. Edward McLean; Thomas M. Walsh; C. Wayne Williams.

Equal Employment Opportunity Medal: Jess G. Ross

Public Service Group Achievement Award: NASTRAN Project Office, Computer Sciences Corporation

Group Achievement Award: Magnetic Bubble Data Recorder Development Team.

NASA News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23665
AC 804 827-3966

RELEASE NO. 78-67

For Release:

Karen Miller
(804) 827-2934

November 3, 1978
3 p.m.

VOUGHT CORPORATION CONTRACT MODIFIED

Hampton, Va.--The Vought Corporation, of Dallas, Texas, has been awarded a modification to their contract to provide Scout launch vehicles to the National Aeronautics and Space Administration.

Under this modification, Vought will provide twelve additional Guidance Systems for use on Phase 8 Scouts. This is the same type of system used on the launch vehicle since the Scout program began.

Vought has been the Scout Project's prime contractor since 1959. The first Scout was launched on July 1, 1960, and was designed to place a 130-pound payload into a 300 nautical-mile circular Earth orbit. Today's Scout is designed to place a 404-pound payload in that orbit.

Scout vehicles are launched from Wallops Island, Va.; Vandenburg Air Force Base, Calif.; and San Marco, in Kenya, Africa.

The present configuration of Scout vehicles is known as Phase 8. One hundred seven (107) vehicles comprised Phases 1 through 7; 98 of these have been launched.

The incentive contract modification is valued by the Vought Corporation at approximately \$6.5 million. The contract covers a period of two and one-half years and is managed by NASA's Langley Research Center.

NASA News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23665
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RELEASE NO. 78-80

For Release

Keith Koehler
(804) 827-2934

November 17, 1978

INDIANS ASSIST IN LANGLEY RESEARCH

Hampton, Va.--Throughout the history of flight, men from countries all over the Earth have taken part in aeronautical research both in their homelands and here in the United States.

The Subsonic-Transonic Aerodynamics Division at NASA's Langley Research Center presently has six researchers who are from India. The six men, all holding doctorate degrees, are at the Center through contracts and grants.

Dr. Ramaswamy, Bangalore, is doing research on wind tunnel volume wall effects. Ramaswamy arrived at Langley in June 1978 through the U.S. National Research Council.

Ramaswamy holds a bachelor's degree in mechanical engineering from Bangalore University and a master's degree in aeronautics from the India Institute of Science. He joined the staff of the India National Aeronautics Laboratory in 1960. From 1967 to 1971 he worked on his doctorate degree at the California Technological Institute and then returned to the National Aeronautics Lab.

Dr. Balakrishna, Bangalore, is working on the modelling of cryogenic tunnels. He is at Langley through Old Dominion University. Balakrishna received his bachelor's degree in electrical engineering and his doctorate degree in automation from the Indian Institute of Sciences.

Balakrishna worked for 18 years at the India National Aeronautics Lab on various aeronautical systems. Balakrishna's interests are in control systems, structural testing and aeronautical control problems.

Dr. Rao, Bangalore, is working on vortex flow concepts for improving transonic and supersonic aircraft. Previously he worked on advanced cargo concepts. Rao is working at Langley through ODU.

Rao received his bachelor's and master's degrees in general science from Allehabad University, India. He received his doctorate degree in aeronautics from the University of London. He has worked for 15 years at the India National Aeronautics Lab.

Dr. Goradia, Bombay, is working on boundary-layer development and multi-component airfoils. Before that he developed original theoretical and computer programs for viscous flows on clean wing and lift systems.

Goradia received his bachelor's degree in mechanical engineering from Bombay University, his master's degree in mechanical engineering from the University of Michigan and his doctorate degree in mechanical engineering from Georgia Tech. From 1961 to 1964 he worked at Air Products and Chemical Inc., Allentown, Pa., in cryogenics and in 1964 he joined the staff at Lockheed-Georgia. Goradia is at Langley through Lockheed.

Dr. Reddy, Nellore, is working on numerical investigation of aerodynamic characteristics of wings with separated flows. Before coming to Langley he served as an assistant professor of mechanical engineering at ODU during the 1977-78 term.

Reddy received his bachelor's degree in mechanical engineering from the University of India, his master's degree in mechanical engineering at the University of Hawaii and his doctorate in thermal and fluid sciences from Clarkson College of Technology, Potsdam, N.Y.

Reddy has worked as a design engineer for a power plant and taught mechanical engineering at an Indian university for about eight years. He came to the United States in 1972. He also served as a post-doctorate fellow for about eight months at Clarkson.

Dr. Mehrotra, Kanpur, is working on jig shape predictions for models to go in the National Transonic Facility tunnel. He has also worked on the effects of aerolasticity in supersonic cruise aircraft research (SCAR) and transonic aircraft technology (TACT). His interests include aerodynamics and elasticity.

Mehrotra received his bachelor's degree in aerospace engineering from the Indian Institute of Technology, Kanpur, and his master's degree and doctorate degree in aerospace engineering from the University of Kansas.

He has worked at Langley since 1974 through the University of Kansas. Mehrotra is the representative of all Indians living on the Peninsula, and responsible for all Indian functions such as festivals and picnics.

NASA News

National Aeronautics and
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RELEASE NO. 78-81

For Release:

Karen E. Miller
(804) 827-2934

November 22, 1978

GENERAL ELECTRIC COMPANY AWARDED NASA CONTRACT

Hampton, Va.--The General Electric Company, of Newport News, Virginia, has been awarded a NASA contract to provide rigid closed cell foam insulation material for use in the National Transonic Facility (NTF).

The NTF is a cryogenic wind tunnel under construction at NASA's Langley Research Center. The insulation material will be installed on the internal surface of the tunnel's cylindrical pressure shell.

This contract covers a period of a little over one year and the work will be performed at the G. E. Thermal Systems Programs plant in Tacoma, Washington.

The definitive contract is valued by G. E. at approximately \$1.4 million. The work will be managed by the Langley Research Center.

NASA News

National Aeronautics and
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RELEASE NO. 78-83

For Release:

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December 6, 1978

BERGER TO DISCUSS NONDESTRUCTIVE TESTING

Hampton, Va.--"Nondestructive Testing--Its Growing Importance for the 1980's" will be the topic of the colloquium lecture at NASA's Langley Research Center on Monday, December 11.

Harold Berger, Chief, Office of Nondestructive Evaluation at the National Bureau of Standards, will give the talk in the Reid Activities Center (Building 1222) at 2 p.m. A question and answer period will follow.

Nondestructive testing (NDT) has been used extensively since World War II, particularly by the aerospace and nuclear industries which require unusually high reliability and quality in their products and operations. This early use of NDT, involving radiographic, ultrasonic, magnetic, penetrant, and eddy current techniques, will be described.

Although this early (and continuing) use of NDT contributed to increased safety and long-lived products, there is potential for a much greater contribution. Berger says that significant improvements in industrial productivity and in the conservation of energy and materials

can be realized from more reliable and quantitative NDT. A wide variety of problems, such as an aging fleet of military airplanes, the demand for a clean environment with NDT implications for nuclear plants, pipelines and offshore facilities, and the needs associated with product liability, are placing increased demands on NDT. These challenges are stimulating many new developments. To illustrate this, Berger will discuss recent advances in radiography; this will include real-time methods, image enhancement, and unusual radiation techniques involving neutrons and protons.

NASA News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23665
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RELEASE NO. 78-86

For Release:

Karen E. Miller
(804) 827-2934

December 18, 1978

TELOS COMPUTING SELECTED FOR NEGOTIATION

Hampton, Va.--Telos Computing, Inc., Santa Monica, Calif., has been selected for negotiation leading to the award of a NASA contract to develop the software for the National Transonic Facility (NTF) wind tunnel at NASA's Langley Research Center.

This software involves networking of four medium-sized computers which will comprise the nucleus of NTF's instrumentation complex. It will provide for collection and display of all research measurements as well as providing automatic control for many of the wind tunnel test parameters.

Telos has estimated the value of this cost-plus-fixed-fee contract to be approximately \$1.2 million. The work will be performed at the Langley Research Center in Hampton, Va., over a period of three years.

NASA News

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RELEASE NO. 78-87

For Release:

Keith Koehler
(804) 827-2934

December 22, 1978

NASA WORKS TO MAKE SCIENCE A PART OF EVERYONE'S LIFE

Hampton, Va.--"Science is not for the professional student alone. Everyone will take an interest in its results if they are only put before the world in the right way." -- Samuel Pierpont Langley

NASA's Langley Research Center employees worked to make science of interest to everyone during 1978. Langley researchers were involved in many research and development programs, not only in aeronautics and space, but programs that will benefit people in their daily lives.

The year 1978 was a productive one at the Center. In 1977, some 1,200 research and technological achievements were recorded at the Center. The 1978 figure is predicted to exceed that figure, but the exact number will not be available until February 1979.

Research in 1978 was conducted on helicopters, the Earth's atmosphere, space vehicles and structures, airplane structures, guidance systems and safety, marine environments, the environments of other planets, and many other projects. Here are just a few of the achievements at Langley in 1978.

1978 brought an end to the Langley Research Center's involvement in Project Viking, in which spacecraft have operated on Mars for well over two Earth years. Experiments in the last year have contributed significantly to the understanding of the mineralogy, magnetic and physical properties of surface materials, and the geodesy of Mars and its satellites. NASA's Jet Propulsion Laboratory in California is now handling Viking data.

The one-year live-in test of NASA's Tech House was completed last August. Preliminary results from the test indicate that a family can save considerable amounts of both money and energy through the use of new technical systems developed from the space program.

In 1978, locating internal leaks within the insulated walls of large liquid natural gas containers was creating costly delays in tanker construction at the Newport News Shipbuilding and Drydock Company. Asked about possible leak detection techniques by shipyard personnel, NASA engineers decided that the use of an infrared scanning radiometer would identify the leaks by detecting small surface temperature changes in the container walls. As a result of these tests, the shipyard was able to repair the faults and certify the liquid natural gas containers within a few weeks.

Electrical current sources and surgically implanted terminals were designed and developed in 1978 to support medical research at Duke University. Preliminary data indicated that a bone fracture may heal more rapidly as a function of bone current.

Langley researchers developed in 1978 a family of self-contained, high-impact, acoustic devices to facilitate the location and recovery of research payloads from the ocean. These devices are now required on all commercial aircraft in the United States and most foreign countries. Since implementation, five downed aircraft have been located by the use of these aids.

Successful test of the U.S. candidate Microwave Landing System (MLS), using the Langley Terminal Configured Vehicle B-737 aircraft at Buenos Aires (1977), New York (1977) and Montreal (1978), contributed to the selection in April 1978 of the U.S. scanning beam over the United Kingdom Doppler technique as the world standard.

In the Aircraft Energy Efficiency program, studies continue in laminar flow control, composites and energy efficient transport. The work in these areas will help bring about more fuel-efficient aircraft in the near future.

Research continued in 1978 in the area of aircraft stall/spin. This research includes concepts for spin avoidance, development of theoretical methods for motion prediction, fundamental research on stall/spin aerodynamics and support of specific airplane development programs.

In the aircraft crashworthiness program, research on energy-dissipating seat and floor concepts has led to the design and fabrication of three new general aviation passenger seats. The seats are being evaluated through computer simulation, sled tests and crash tests.

During 1978 Langley completed the design and fabrication of the Long Duration Exposure Facility (LDEF) structure. The LDEF will carry

approximately 47 experiments developed by Langley, other NASA centers, the Air Force, universities, industry, and foreign countries into space for six to 12 months. The LDEF is scheduled to be one of the first Space Shuttle payloads.

In 1978, a significant new sensor device for nondestructive evaluation and quantitative analysis of structural materials was developed and demonstrated in the laboratory. The device, an Ultrasonic Acousto-Electric Transducer (AET), was recently selected as one of the 100 most significant technical developments by Industrial Research Magazine.

These are just a few of the accomplishments achieved by researchers at the Langley Research Center in 1978. The list continues, involving areas in pollution monitoring, large space structures, hypersonic and supersonic transports, and aircraft noise studies. These projects and many more helped bring the interest of science to everyone in 1978.

NASA News

National Aeronautics and
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Langley Research Center
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AC 804 827-3966

RELEASE NO. 78-88

For Release:

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December 21, 1978

LOCKHEED AWARDED NASA CONTRACT FOR ENERGY EFFICIENT TRANSPORT PROGRAM

Hampton, Va.--Lockheed-California Company, Burbank, Calif., has been awarded a NASA contract to develop and evaluate in flight an augmented stability active controls concept with a small horizontal tail.

An earlier NASA contract with Lockheed (Phase I of the Energy Efficient Transport Program) supports the development of aerodynamic and active controls concepts which were deemed cost-effective in achieving increased energy efficiency of new and derivative civil transport aircraft in the early 1980 time frame.

The two concepts evaluated in the Phase I Selected Concepts Program are wing tip extensions and reduced horizontal tail size. These concepts require active controls when applied to derivative aircraft to minimize structural changes in the case of the extended wing tips and to maintain satisfactory control and handling qualities in the case of reduced horizontal tail size.

The active control systems required for load alleviation, as well as the mathematical tools necessary for the synthesis and analysis of these systems, have been developed and tested by Lockheed in the Phase I

Selected Concepts Program. These tests have demonstrated that the required systems are practicable and effective and that the performance of these systems can be accurately predicted. The active controls system required for stability augmentation was developed using classical control system techniques and was evaluated in flight simulation testing. Parallel independent studies conducted with Lockheed funding developed the aerodynamic characteristics of the reduced-area active-controls horizontal tail.

An evaluation of the results obtained to date from the Phase I program and independently funded activities at Lockheed indicates that a state of technological readiness has been reached which will permit the flight demonstration of active controls for stability augmentation on a commercial air transport having reduced horizontal tail size.

Lockheed has estimated the total value of this cost-sharing contract to be approximately \$17.6 million. The Government will pay approximately \$15.8 million and Lockheed will contribute about \$1.7 million.

The work will be performed over a period of 44 months at Lockheed's Burbank facility. NASA's Langley Research Center will monitor this contract.

NASA News

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RELEASE NO. 78-89

For Release:

Karen E. Miller
(804) 827-2934

December 22, 1978

NASA VISITOR CENTER FEATURES NEW FILM

Hampton, Va.--The NASA Langley Research Center Visitor Center has begun daily showings of a new film entitled, "1978 Aeronautics and Space Highlights."

The fifteen minute film features the Space Shuttle, the Pioneers to Venus, the Space Telescope and satellites such as Landsat and Seasat. Another part introduces NASA's 35 new astronaut candidates, including Maj. Fred Gregory, who lived in Hampton until recently. Aircraft stall/spin and wind energy systems research are also highlighted.

The NASA Visitor Center is open Monday-Saturday from 8:30 to 4:30 and Sundays from 12 noon to 4:30. It will be closed on Christmas and New Year's Day.

NASA News

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Langley Research Center
Hampton, Virginia 23665
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RELEASE NO. 79-1

For Release:

Keith Koehler
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January 11, 1979

PIONEER VENUS MISSION FEATURED AT NASA VISITOR CENTER

Hampton, Va.--NASA's Pioneer mission to Venus will be featured in a special program January 15 through 31 at the NASA Langley Visitor Center.

A 20-minute review of the space exploration mission will be given at 2:00 p.m. each Monday through Friday in the Visitor Center auditorium.

The Pioneer Venus program will include a basic review of the mission, including its purpose, and a description of the launch, spacecraft orbit, mission probes, and early results from the mission.

Models of the spacecraft and photos of the planet will be on display during the special program.

School groups will be given a brief review of the mission during tours of the Visitor Center.

The Pioneer Venus encounter is the most extensive study ever made of Venus. Information gathered by 30 Pioneer experiments on the composition, circulation and energy balance of Venus' atmosphere may help us to learn more about the forces that drive the weather on Earth.

Pioneer Venus 1 is taking pictures and making measurements of the Venusian atmosphere. Pioneer Venus 2 consisted of four probes and a transporter bus that plunged into the Venusian atmosphere, making measurements as they fell on December 9, 1978.

The Pioneer Venus program is one in a series of special programs at the Visitor Center. Each month the Center features programs on various aspects of NASA's research.

In February, the Visitor Center will feature the Stratospheric Aerosol and Gas Experiment (SAGE). SAGE, which may help answer questions on the effects of aerosols and ozone on Earth's climate and environmental quality, is scheduled to be launched January 25 from NASA's Wallops Flight Center, Wallops Island, Virginia.

The NASA Visitor Center is open Monday-Saturday from 8:30 to 4:30 and Sundays from noon to 4:30.

NASA News

National Aeronautics and
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Langley Research Center
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RELEASE NO. 79-2

For Release:

Keith Koehler
(804) 827-2934

January 11, 1979

PUBLIC SERVICE ANNOUNCEMENT, NASA-LANGLEY VISITOR CENTER - 30 SECONDS

Hampton, Va.--NASA's Pioneer mission to Venus will be featured in a special program January 15 through 31 at the NASA Langley Visitor Center.

A 20-minute review of the space exploration mission will be given at 2:00 p.m. each Monday through Friday in the Visitor Center auditorium.

The review will include a description of the launch, spacecraft orbit, mission probes and early results from the mission.

Models of the spacecraft and photos of the planet will be on display for visitors.

NASA News

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RELEASE NO. 79-3

For Release:

Keith Koehler
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February 5, 1979

NASA-LANGLEY SUPPORTS "RICHMOND SPACEWATCH"

Hampton, Va.--The NASA Langley Research Center is presently involved in a special month-long program in the Richmond area featuring lecturers, speakers, films, exhibits, publications, and special events on many aspects of space flight and aviation.

The program, which runs through February, is entitled "Richmond Spacewatch." It is a community involvement project concerned with the nation's space and aeronautics programs.

In his proclaiming the month of February as "Richmond Spacewatch" Richmond Mayor Henry L. Marsh III noted "The National Aeronautics and Space Administration (NASA) has contributed to not only the heritage, but also the advancement of knowledge of the citizens of the United States, the Commonwealth of Virginia and the City of Richmond through its programs aimed at the exploration of the universe."

Marsh acknowledged that the City of Richmond was "grateful to NASA for bringing its record of achievement to the Capital of Virginia" and he urged everyone to participate in the program.

"Spacewatch" was developed by the Science Museum of Virginia, the Richmond City School System, the Richmond Public Library and the regional Mathematics and Science Center.

Special events through the month include:

Feb. 6: A kick-off dinner featuring a talk by Dr. Arnold Frutkin, NASA Associate Administrator for External Relations. Sponsored by the Richmond Chamber of Commerce, the dinner will begin at 8 p.m. at the John Marshall Hotel.

Feb. 8, 15, and 22: "Mars, the Red Planet." A special program examining Mars in history, fantasy and as the 1976 Viking mission saw it. The program begins at 7 p.m. at the Thomas Jefferson Planetarium. For reservations call 780-6886.

Feb. 12: Space Shuttle astronaut Robert L. Crippen will tour the city schools and visit the 7 p.m. City Council meeting.

Feb. 13: Crippen will give a talk to a joint meeting of the Richmond Council of PTA's at 7 p.m. at the Henderson Middle School theater.

Feb. 17: Aeronauticsmobile exhibit at Willow Lawn Shopping Center.

Feb. 19: Aeronauticsmobile exhibit at the Science Museum of Virginia.

Feb. 20-21: Aeronauticsmobile exhibit at the Richmond Technical Center for interested students.

Feb. 22: Dr. Donald P. Heath, NASA Langley Director, will speak to area science educators at 3 p.m. at Henderson Middle School and address a dinner meeting of the Chesterfield County Junior Chamber of Commerce.

Feb. 24: Space suit pictures for children and an astronaut "complex coordinator" at Willow Lawn.

Other events through the month include:

Lecture-demonstration programs on NASA space and aeronautics research and flight programs will be given in every Richmond School during February by two spacemobile units, featuring speakers from three NASA field centers.

A large space exhibit will be featured at the Science Museum, including a Moon rock exhibit and 30 oil paintings, by nationally known artists depicting NASA's Apollo and Viking missions. Lecture-demonstrations will be presented at the Museum on specific days. Children can have their pictures taken in a space suit before a lunar surface backdrop, and visitors can test their reflexes with a lander trainer.

The main library will display 30 oil paintings of scenes from the Mercury and Apollo manned space programs.

WCVE-TV, Channel 23, will feature NASA films each weekend during February between 2 and 4 p.m.

The "Richmond Spacewatch" is being coordinated by Barry Ostrow, community Relations Specialist, Richmond Public Schools; and Harold Mehrens, Education Programs Officer, NASA Langley Research Center. For further information call Ostrow, 780-5432, or Mehrens, 827-3966.

NASA News

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RELEASE NO. 79-4

For Release:

Jean Drummond
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February 8, 1979

SUMMERS TO DISCUSS ENERGY AT LANGLEY COLLOQUIUM

Hampton, Va.--Dr. Robert A. Summers will speak on "Planning Advanced Energy Technologies (Fusion, MHD, and Satellite Power Systems Examples)" at the February 12 colloquium. The lecture will be in the Langley Research Center's Activities Center, Building 1222, beginning at 2 p.m. There will be a question and answer session at 2:50 p.m. and an informal discussion period from 3 to 3:30 p.m.

Some of the problems of planning advanced energy technologies will be discussed in terms of the technological uncertainties and the necessity for economic viability in the energy supply marketplace. Brief descriptions of the technical status, problems, and plans for three quite different advanced technologies will be provided as examples: fusion energy, magnetohydrodynamic power generation, and satellite power stations.

Summers is Executive Director of the Research and Development Coordination Council in the U.S. Department of Energy. He is responsible to the Director of Energy Research for the overall conduct of the council's activities and directs the council staff. He previously served as Chief of Plans and Programs in the office of the Assistant Administrator for

Field Operation as the Energy Research and Development Administration (ERDA) which became part of the Department of Energy in 1977. Before joining ERDA in 1975, he was employed at the System Planning Corporation.

One of his work assignments involved research in flight control systems at the MIT Instrumentation Laboratory; he was chief project engineer at Allied Research Associates, project leader in aerospace systems at the Institute of Naval Studies, and principal engineer and program manager at NASA.

Summers has had extensive experience in both government and industry, much of it in program management related to space and defense systems research and development, applications of space technology, technology transfer to developing countries and energy research and development.

He received a bachelor of science degree from Rensselaer Polytechnic Institute and master and doctor of science degrees, all in aeronautical engineering, from the Massachusetts Institute of Technology (MIT). He received a Douglas Aircraft Corporation Fellowship in aeronautical engineering at MIT and was an overseas exchange fellow with the Royal Institute of Technology, Stockholm, Sweden.

NASA News

National Aeronautics and
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Langley Research Center
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X

RELEASE NO. 79-8

For Release:

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March 5, 1979

JAMES WALKER TO SPEAK FOR NASA COLLOQUIUM

Hampton, Va.--Dr. James C. G. Walker will be the guest speaker for the NASA Langley Research Center colloquium on Monday, March 12. He will speak on "The Influence of Life on the Evolution of the Atmosphere."

The colloquium will be held in the Activities Center (Building 1222) at 2 p.m. There will be a question and answer session at 2:50 p.m. and an informal discussion period from 3 to 3:30 p.m.

According to Walker, the early history of life on Earth may have been characterized by the concurrent evolution of life forms and the composition of Earth's atmosphere. Developments in early organisms affected the atmosphere, and resulting atmospheric changes stimulated the ability of microbial forms to change and grow.

Walker is Senior Research Associate and Head of Ionospheric Research at the National Astronomy and Ionosphere Center in Arecibo, Puerto Rico. He has conducted research in aeronomy, ionospheric physics, planetary atmospheres, and atmospheric evolution. He has served as principal investigator on the Atmosphere Explorer Program, coinvestigator on

Spacelab I, and Assistant Professor and Associate Professor at Yale University, Department of Geology and Geophysics.

He was born in Johannesburg, South Africa. He received a bachelor of science degree from Yale University and a doctorate in geophysics from Columbia University. He has had postdoctoral experience at Goddard Institute for Space Studies in New York; Goddard Space Flight Center, Greenbelt, Maryland; and the Queen's University of Belfast, Northern Ireland.

Walker is the author of Atmospheres and Evolution of the Atmosphere.

NASA News

National Aeronautics and
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RELEASE NO. 79-9

For Release:

Maurice Parker
(804) 827-2934

March 2, 1979

MINORITY FIRM GETS NASA-LANGLEY CONTRACT

Hampton, Va.--High's Carpet Care and Janitorial Service, Inc., of Hampton, has been awarded a contract to provide custodial services for NASA's Langley Research Center.

The contract is one of the largest ever awarded by Langley to a minority-owned small business. The value of the three-year agreement is estimated at approximately \$2.4 million.

High's will provide cleaning service for all offices, laboratories, shops, warehouses, restrooms, floors, stairways, and elevators at Langley. The contractor will also remove snow and ice from exterior steps, building entrances and walkways, plus set up furniture and equipment for Langley conference rooms.

The incentive contract became effective February 1 and will run through early 1982.

NASA News

National Aeronautics and
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Langley Research Center
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RELEASE NO. 79-12

For Release:

Jean Drummond
(804) 827-2934

March 13, 1979

HUBBARD FIRST U.S. CITIZEN TO RECEIVE AIAA AEROACOUSTICS AWARD

Hampton, Va.--Harvey H. Hubbard, Assistant Chief, Acoustics and Noise Reduction Division at NASA's Langley Research Center, has received the American Institute of Aeronautics and Astronautics (AIAA) Aeroacoustics Award for 1979. Hubbard is the first U.S. citizen to receive this distinguished award.

The AIAA presents the award annually for an outstanding technical or scientific achievement by an individual's contribution to the field of aircraft community noise reduction.

The award was presented to Hubbard at an Awards Luncheon on Tuesday, March 13, during the 5th AIAA Aeroacoustics Conference in Seattle, Washington.

The citation that accompanied Hubbard's award states: "For outstanding scientific contributions to understanding and reducing the generation, propagation and effects of aircraft noise."

A native of Swanton, Vermont, Hubbard graduated valedictorian from Swanton High School. He received a bachelor of science degree in electrical engineering from the University of Vermont in 1942 and has performed graduate work in aerodynamics at the University of Virginia.

Hubbard began his career with NASA's predecessor agency, the National Advisory Committee for Aeronautics (NACA), in 1945 as a flight vehicle acoustician. In 1958 he was appointed Head, Atmospheric and Acoustics Branch of the Dynamic Loads Division. In 1959 Hubbard was made Head, Acoustics Branch, Dynamic Loads Division and continued in that position until 1973, when the Branch was elevated to the Acoustics and Noise Reduction Division. He was appointed to his present position at that time.

Prior to coming to Langley, Hubbard was employed at Westinghouse Manufacturing Company for a short period in 1942, where his work resulted in a U.S. patent for a flame-quenching device in circuit breakers. From 1942 to 1945 he served as an officer in the U.S. Army Signal Corps and Air Corps. He later retired with the rank of Lieutenant Colonel in the Air Force Reserves.

The author or co-author of more than 100 technical reports, journal articles and book chapters, Hubbard received the NASA Special Service Awards for Exceptional Service in 1967 and for Outstanding Scientific Achievement in 1968, the Group Achievement Award in 1968, and the Gold Medal for Outstanding Scientific Achievement in 1969. The Silver Medal Award of the Acoustical Society of America was presented to Hubbard in 1978 for his contributions to the understanding of aircraft noise, its generation, propagation, and control, and its effects on people and structures.

Hubbard is a fellow of the Acoustical Society of America; associate fellow of AIAA; President of the Institute of Noise Control Engineering; and a Charter member of the British Institute of Acoustics.

He is married to the former Sadie Margaret Miller of Iron City Georgia, and lives in Newport News, Virginia. They have two sons and two daughters.

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RELEASE NO. 79-13

For Release:

Jean Drummond
(804) 827-2934

March 13, 1979

DOUGLAS AIRCRAFT COMPANY AWARDED NASA CONTRACT

Hampton, Va.--The Douglas Aircraft Company, McDonnell Douglas Corporation, 3855 Lakewood Boulevard, Long Beach, California, has been awarded a contract by the National Aeronautics and Space Administration (NASA) to develop and evaluate advanced active controls and aerodynamics technology for subsonic commercial aircraft.

This contract is part of NASA's Aircraft Energy Efficient Program aimed at making commercial transport airplanes 50 percent more fuel efficient by the early 1980's.

The contractor estimates the value of this cost-sharing contract to be approximately \$15.7 million, with the government contributing \$14.2 million and the contractor contributing approximately \$1.5 million. The contract covers a period of four years and the work will be performed at the Long Beach facility. The contract will be managed by NASA's Langley Research Center.

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RELEASE NO. 79-15

For Release

Jean Drummond
(804) 827-2934

March 16, 1979

LOCKHEED COMPANY CONTRACT MODIFIED

Hampton, Va.--The Lockheed-California Company, Lockheed Corporation, of Burbank, California, has been awarded a modification to their NASA contract on Supersonic Cruise Technology Assessment Studies.

This contract involves technology assessment studies to determine and define the impact of new technology advances on the performance of supersonic cruise vehicles.

This modification will permit investigating advances in aerodynamic, propulsion, acoustic and structures technology in order to improve performance, cost and risk; defining and performing studies and tests required for technology readiness; and establishing required future research needs and programs necessary to obtain technology readiness in the late 1980's time period.

The value of this modification is approximately \$1.1 million, bringing the total value of this contract, awarded in 1976, to \$3.3 million. The work will be performed at Lockheed's Burbank facility. The contract is managed by NASA's Langley Research Center.

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RELEASE NO. 79-16

For Release:

Keith A. Koehler
(804) 827-2934

March 21, 1979

NASA LANGLEY TO CO-SPONSOR LOW SPEED AND MOTORLESS FLIGHT SYMPOSIUM

Hampton, Va.--The Third International Symposium on the Science and Technology of Low Speed and Motorless Flight will be held March 29 and 30 at the NASA-Langley Research Center. The event is sponsored by NASA and the Soaring Society of America (SSA).

The symposium will include presentations of papers, a tour of the Langley Research Center and a banquet. The guest speaker at the banquet will be Dr. Paul MacCready, designer of the first human-powered airplane to make a controlled flight, the "Gossamer Condor."

MacCready will speak on the "Gossamer Condor" and the "Gossamer Albatross," a new human-powered airplane that will attempt to cross the English Channel this spring from Great Britain to France.

Topics to be covered in the two-day symposium are low-speed aerodynamics, optimal flight techniques, structures and materials, ultra-light sailplanes and hanggliders, and powered sailplanes. Presentations will be made by individuals from Germany, Belgium, France, Poland, Italy and the United States.

The conference is also expected to draw people from England, Canada, Finland, Brazil, Norway, the Republic of South Africa and the United States who are interested in soaring, gliding, and light general aircraft.

Co-chairmen for the event are Oran W. Nicks, Deputy Director of the Langley Research Center, and Dr. James Nash-Webber, past chairman of the SSA technical board and a professor at the Massachusetts Institute of Technology. The symposium organizer and technical program chairman is Perry Hanson, of Langley's Structures and Dynamics Division.

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RELEASE NO. 79-18

For Release:

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March 22, 1979

DOUGLAS AIRCRAFT COMPANY CONTRACT MODIFIED

Hampton, Va.--The Douglas Aircraft Company, McDonnell Douglas Corporation, Long Beach, California, has been awarded a modification to a NASA contract for supersonic cruise technology assessment studies.

This contract involves conducting supersonic cruise vehicle technology application studies to support a program directed toward developing a strong technology base for possible future aircraft development.

This modification will permit additional technology trade-off studies to be conducted in the areas of aerodynamics, flying qualities simulations, materials, propulsion, and airframe-propulsion integration.

The value of this modification is approximately \$1 million, bringing the total value of this contract, awarded in 1976, to \$3.3 million. The work will be performed at the Long Beach facility. The contract is managed by NASA's Langley Research Center.

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RELEASE NO. 79-19

For Release:

Jean Drummond
(804) 827-2934

March 27, 1979

BOEING COMPANY CONTRACT MODIFIED

Hampton, Va.--The Boeing Company, Seattle, Washington, has been awarded a modification to a NASA contract on advanced concept studies for supersonic vehicles.

The purpose of this contract is to expand the present supersonic cruise research data base and to identify further technology improvement possibilities.

This modification provides for continuing the definition and analysis of supersonic airplane concepts which would provide performance improvements by applying advanced technology now becoming available.

The value of this modification is approximately \$1 million, bringing the total value of this contract, awarded in 1976, to \$3.4 million. The work will be performed at the Boeing Seattle facility. The contract is managed by NASA's Langley Research Center.

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RELEASE NO. 79-20

For Release:

Keith A. Koehler
(804) 827-2934

March 30, 1979

SPACE SHUTTLE FEATURED AT NASA VISITOR CENTER

Hampton, Va.--NASA's Space Shuttle will be featured in a special lecture program entitled "Space Shuttle--The New Era of Space Transportation," at 2 p.m. every Monday through Friday during April, at the NASA-Langley Visitor Center.

The lecture will include photos of the Shuttle, a brief review of the building and testing of the first Shuttle, "Enterprise," launching and landing preparations and procedures, and uses of the Space Shuttle. Group presentations are available by calling (804) 827-2855.

The Space Shuttle is scheduled to make its first test flight in November 1979. Each Shuttle is designed to fly approximately 100 missions. The Shuttle will have multiple uses, including the launch and retrieval of satellites.

The Space Shuttle program is one in a series of special programs at the Langley Visitor Center. Each month the Center features programs on various aspects of NASA's research. For information on future programs, call the NASA Visitor Center, 827-2855.

The Visitor Center is open Monday-Saturday from 8:30 a.m. to 4:30 p.m. and Sunday from noon to 4:30 p.m.

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X
APR. 2

RELEASE NO. 79-22

For Release:

Jean Drummond
(804) 827-2934

April 2, 1979

'AVIATION WEEK' PUBLISHER-EDITOR TO SPEAK AT HAMPTON COLISEUM

Hampton, Va.--Robert B. Hotz, Publisher-Editor of "Aviation Week and Space Technology" and a world-renowned aerospace journalist, will be the guest speaker for the "Our Future in the Cosmos" public lecture on Monday, April 9.

The lecture entitled, "The Future of International Space," will be held in the Hampton Coliseum at 8 p.m. The public lecture series is sponsored by NASA and the College of William and Mary. Free tickets are available at the Coliseum box office.

In his talk, Hotz will express his personal views on the need for international cooperation in space. He believes that the future development and safety of all nations depends on a coordinated and organized international space exploration and research effort. He will stress the technical, economic and social trends in space technology which are shaping new methods of improving life on Earth and unlocking the secrets of the universe. His lecture will also emphasize trends in the massive Soviet space program and the growing capabilities of Europe and Japan.

An outspoken advocate of an imaginative, long-range national space program, Hotz has covered aerospace activities for 39 years on four continents. He served in the U.S. Air Force during World War II and was a correspondent during the Korean conflict. In 1973 he was among the first U.S. journalists to visit the Soviet supersonic transport production line and the cosmonaut training center. In 1975, he was the only journalist invited by both the Israeli Defense Ministry and the Egyptian Ministry of War to visit their respective air forces and discuss the airpower lessons of the October 1973 war.

A graduate of Northwestern University, Hotz is the author of several books, including "With General Chennault, the Story of the Flying Tigers." He was assistant producer of an official Air Force documentary film, "China Crisis."

Hotz has received the American Business Press Association Crain Award; Long Island University Aviation Pioneer Award; Aviation Writers Association Strebig, Ball and Lyman Memorial Trophies; American Astronautical Society Achievement Award; National Space Club Press Award; Paul Tissandier Diploma of the Federation Aeronautique Internationale; and the Airpower Award of the Air Force Association, New York State Wing.

He is a member of the Caterpillar Club, White Correspondents Association, National Press Club, Explorers Club, Sky Club, Royal Aero Club of London, American Institute of Aeronautics and Astronautics, and is a companion of the Royal Aeronautical Society.

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RELEASE NO. 79-23

For Release:

Keith A. Koehler
(804) 827-2934

April 5, 1979

NASA-INVENTED POLLUTION DETECTOR TO BE MARKETED

Hampton, Va.--A license to manufacture a NASA-invented sulfur dioxide pollution detector, called a "Stack Plume Visualization System," has been granted to a Williamsburg, Va., company.

The system, developed at NASA's Langley Research Center, Hampton, Va., is a video air pollution monitoring system that can be used by environmental agencies and by private industry.

The marketed system is intended primarily to monitor coal- and oil-fired power plants and facilities that manufacture sulfuric acid. The system visualizes sulfur dioxide emission plumes by observing the absorption of ultraviolet radiation by sulfur dioxide against the normal sky background.

The most widespread type of community air pollution is sulfurous smog, air predominately polluted by sulfur oxides and other sulfur-bearing compounds, usually in association with particulate matter. In many communities, sources such as power plants and heavy industry contribute to the major portion of primary pollutants: sulfur oxides and particulate matter.

Visiplume, the marketed version of the NASA invention, is a micro-processor system which uses video techniques to measure sulfur

dioxide concentration from 0 to 3,000 parts per million, gaseous flow velocity and the sulfur dioxide emission rate. The flow velocity is obtained by tracking fluctuations in the sulfur dioxide concentration as a function of time.

A standard television monitor is used to display the plume and those locations in the plume where the measurements are taken. The monitor is also used to display instructions to the operator for proper procedure. Final results are displayed on the monitor and on a paper tape printer.

Visiplume is the first commercially available system for remotely measuring sulfur dioxide gas flow. The velocity of the gas, plus the simultaneous measurement of sulfur dioxide concentration, yields the emission rate, which is the ultimate measure of pollution.

The exclusive license to manufacture the system was granted by NASA to Research Ventures, Inc. Dr. R. J. Exton, president of Research Ventures, said, "We also hope that the system will be useful in checking the efficiency of various gas desulfurizing techniques such as the use of scrubbers." Scrubbing is a process of removing sulfur dioxide from the gaseous flow of fossil-fired plants after combustion.

The normal way of monitoring sources of sulfur dioxide is by stack sampling, according to Exton. This involves the use of a team of regulatory personnel who must gain access to the gas stream, take "grab" samples and then perform chemical analysis.

"Hopefully, remote techniques can bypass some of these problems and offer a truly cost-effective way of monitoring these pollution sources," Exton said.

Sulfur dioxide has many effects on the environment. Precipitating sulfur dioxide, called acid rain, has been found to kill fish, erode buildings, and destroy plants.

In the form of sulfurous smog, it interacts with aerosols to affect the lower respiratory system of humans. It has been found to damage the leaves of plants exposed to sufficiently high concentrations and dosages, and prolonged exposure to sulfurous smog is known to have caused serious damage to building marble, limestone and mortar.

Inquiries on Visiplume should be made to R. J. Exton, Research Ventures, Inc., Williamsburg, Va., 23185; (804) 220-3430.

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APR 9

RELEASE NO. 79-24

For Release:

Maurice Parker
(804) 827-2934

April 9, 1979

SPACE RESEARCH GOES UNDERWATER

Hampton, Va.--~~Assembly~~ ^{assembling} Techniques for ~~joining the elements of~~ large space structures are being tested inside a huge water tank at NASA's Marshall Space Flight Center in Huntsville, Ala.

The test project is ~~one~~ part of NASA's Large Space Systems Technology (LSST) program, managed at ~~the~~ Langley Research Center.

Pressure-suited engineers work inside the 1.3-million-gallon water tank, called a Neutral Buoyancy Simulator, ^{assembling} ~~to assemble~~ tubular columns ~~that were~~ designed at Langley.

Each column is made of long, tapered struts that can be nested together (like a stack of paper cups) during transport into Earth orbit inside the cargo bay of a Space Shuttle Orbiter. Once in space, two struts ~~are~~ joined at their larger ends ~~to~~ form a column; ~~several~~ ^{several} columns can ~~then~~ be connected to form tetrahedral (four-sided) frames, ~~which would become the~~ basic elements of a large space structure.

~~The~~ struts are made of a new graphite ~~epoxy~~ ^{with} composite material ~~that~~ has a high strength-to-weight ratio.

The test project, which will continue through May, seeks to prove the mechanical design of the columns, study different space assembly techniques and determine how well the structural elements can be maneuvered in the weightlessness of Earth orbit.

The pressure-suited engineers are weighted ^{to be} ~~so they become~~ neutrally buoyant inside the water tank, neither rising nor sinking, to simulate the zero^g gravity of space.

The LSST program, ~~is~~ managed at Langley in cooperation with other NASA centers and several private companies, ~~the program is provided~~ ^{will} ~~be~~ NASA with a technological base for ~~the possible~~ construction and deployment of large space systems in the 1985-to-1990 time period.

Large space ^{structures} ~~systems~~ will be needed to support ~~such~~ potential missions ^{such} as orbiting communications systems, Earth-observation platforms, power systems to generate electricity for Earth, and large, multipurpose platforms.

Two engineers from Langley, Harold Bush and Larry Bement, are ~~actively~~ participating in the tests ~~at Marshall~~. Although ~~they are~~ not ~~working~~ inside the simulator tank. Jack Stokes of ^{MSFC} ~~Marshall~~ is in charge of the Neutral Buoyancy Simulator.

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APR 27

RELEASE NO. 79-25

For Release:

Keith A. Koehler
(804) 827-2934

April 27, 1979

SCOUT LAUNCH VEHICLE FEATURED AT NASA VISITOR CENTER

Hampton, Va.--NASA's Scout launch vehicle will be featured in a special lecture program, titled "Scout--Story of the Nation's Most Successful Launch Vehicle," at 2 p.m. every Monday through Friday during May, at the NASA-Langley Visitor Center.

The lecture will include a history and development of the launch vehicle, which has achieved a 95 percent successful launch record, and an overview of some of the payloads launched aboard the Scout Vehicle. Group presentations are available by calling (804) 827-2855.

The lecture is in observance of the Scout's 100th launch, scheduled for May 24, from NASA's Wallops Flight Center, Wallops Island, Va. The payload will be the UK-6 satellite, which will conduct studies of high energy astrophysics. Quasars, radio galaxies, supernovae and pulsars are the best examples of high energy sources.

The first Scout launch was in July 1960. The standard Scout launch vehicle is a solid propellant, four-stage booster system. The vehicle is managed at Langley; the Vought Corp. of Dallas is the primary contractor.

The Scout program is one in a series of special programs at the Langley Visitor Center. Each month the Center features programs on various aspects of NASA's research. Future programs will include aeronautical research conducted at NASA-Langley and the Voyager 2-Jupiter encounter. For information on these and other events, call the NASA Visitor Center, 827-2855.

The Visitor Center is open Monday-Saturday from 8:30 a.m. to 4:30 p.m. and Sunday from noon to 4:30 p.m.

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APR 30

RELEASE NO. 79-27

For Release:

Jean Drummond
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April 30, 1979

ALASKA PIPELINE DISCUSSED IN COLLOQUIUM LECTURE

Hampton, Va.--Edward L. Patton, former Chairman and Chief Executive Officer, Alyeska Pipeline Service Company, will speak on "The Trans-Alaska Oil Pipeline," at the NASA Langley Research Center colloquium Monday, May 14.

A news conference will be held at 1:15 p.m., in the Langley Activities Center, Building 1222. The lecture will begin at 2 p.m., followed by a brief question and answer session. At 3 p.m., the speaker will move to the adjoining Langley Room for an informal discussion.

Patton will address the major factors in the design of the pipeline system, including route selection, geotechnical and thermal influences, selection of materials, and valve location. He will review construction accomplishments and the performance of the system since June 1977. Patton will make use of 35mm slides during his presentation.

A native of Newport News, Virginia, Patton graduated from the Georgia Institute of Technology with a bachelor of science degree in chemical engineering. He held a number of management positions with Exxon and was an advisor for the company's refining operations in the Mediterranean,

the Middle East, and the Far East. He also served in the U.S. Navy, including duty as commanding officer of several antisubmarine and escort vessels.

Before joining Alyeska in 1970, Patton directed construction and operation of the refining facility for Exxon's chief domestic affiliate in California. He served as President of Alyeska from its formation in August 1970, until he became Chairman and Chief Executive Officer in 1976. He retired in October 1978 and now resides in Bellevue, Washington.

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RELEASE NO. 79-29

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IMMEDIATELY

NASA SATELLITE TRACKS, STUDIES NEW VOLCANIC ERUPTION

Hampton, Va.--The volcano, La Soufrière, on the island of St. Vincent in the Caribbean, is providing scientists with the opportunity, for the first time, to measure and track volcanic emission flows in the stratosphere by satellite on a global scale.

Researchers at NASA's Langley Research Center, Hampton, Va., through the use of the Stratospheric Aerosol and Gas (SAGE) Experiment satellite and ground truth experiments, are tracking the material spewed into the stratosphere by La Soufrière which erupted April 13, 14 and 17, 1979, ejecting ash and volcanic gases into the surrounding atmosphere.

As much as an inch of dust was deposited on neighboring islands.

The volcanic eruption may provide a rare opportunity for scientists to study the long-term global distribution throughout the stratosphere of aerosols from a single point source, according to SAGE experiment scientist Dr. M. Patrick McCormick of the Langley Research Center. This will depend on the exact magnitude of La Soufrière's perturbation on the total aerosol loading in the stratosphere, he added.

These data may allow scientists, therefore, the ability to check predicted versus actual radiative disruptions to surface and stratospheric temperatures. They offer the opportunity to study the stratospheric transport of this material and the formation of aerosols through various gas-to-particle conversion processes.

Researchers are now directing SAGE data processing to the volcanic eruption and are checking a band between six and 20 degrees North latitude around the Earth measuring the spreading volcanic veil. Other latitudes will be studied as the veil expands toward the poles. McCormick noted that they are coordinating their studies with the scientific community and have alerted a number of researchers throughout the world to put their groundbased and balloon-borne instruments into use in an attempt to provide more data on the volcanic layer.

Langley researchers aboard the Wallops Flight Center's P-3 aircraft were working on SAGE ground truth experiments in Brazil at the time of the first two days of volcanic activity. On their return trip to the U.S., they stopped in Barbados, where they received word of the volcanic eruption. The researchers were William H. Fuller Jr., Bill R. Rouse, Samuel Sokol and David C. Woods from Langley and William H. Hunt and Forrest C. Diehl, Langley contractor employees from Wyle Laboratories in Hampton, Va. The flight crew consisted of John T. Riley and Clarence D. Barrett from NASA-Wallops and Robert L. Snell Jr., Bobby C. Easley and Edward D. Leinberger, Wallops contractor employees from Lockheed Aircraft.

A measurement mission to the St. Vincent's area was planned for April 17, just before sunset. As the aircraft approached the area at approximately 5 p.m. local time (4 p.m. EST), La Soufrière erupted, sending a

large visible plume of material high into the troposphere, appearing to top off at 50,000 feet and move eastward. The cloud looked like a nuclear explosion cloud or a thundercloud with an anvil blowing off to the east.

Researchers aboard the plane took 8-mm. movies and pictures of these events, and made measurements of the plume's aerosol size distribution and concentration and lidar measurements of the aerosol layer. Because of surrounding water vapor clouds and the large amount of dust present, the lidar data taken during the eruption were not easy to interpret in real time and are undergoing analysis at Langley. Lidar measures the concentration and latitude of the aerosol layer by laser light backscattering. This was the first time that such measurements were made under a fresh volcanic plume.

Sulfur gases were detected by the researchers aboard the plane and oxygen masks were donned. The aircraft immediately returned to Barbados, continuing to take data. Another flight mission was planned on April 18 and the aircraft lidar detected the stratospheric aerosol layer moving both east and southwest from St. Vincent. Data from this mission showed that material from the volcanic eruption definitely penetrated the tropopause, the boundary between the upper troposphere and lower stratosphere, and entered the stratosphere. This information was reported to the SAGE satellite research team at Langley the following morning, April 19.

McCormick said that SAGE passed the area on April 23 and 24 and that data from a real-time SAGE pass at 15 degrees North, 57 degrees West, on

April 23, one week after the eruption, showed that SAGE detected the volcanic aerosol layer in the stratosphere. The complete data sets from these days are now being scrutinized in an attempt to determine the magnitude and extent of this event in the total stratospheric aerosol loading, McCormick said.

SAGE, launched February 18, 1979, from NASA's Wallops Flight Center, maps vertical profiles of ozone, aerosols, nitrogen dioxide and molecular extinction in the stratosphere around the globe. This information provides scientists with information to help answer questions about the effects of aerosols and ozone on climate and environmental quality.

The aerosol layer acts like a filter by reducing the amount of sunlight that reaches the Earth's surface and the amount of reflected sunlight that eventually escapes to space. Aerosols, small solid particles or liquid droplets suspended in the surrounding air, are typically less than one millionth of a meter in diameter.

According to SAGE science team member Theodore J. Pepin, Department of Physics and Astronomy, University of Wyoming, Laramie, many questions remain on what effects the ash and volcanic gases will have on the stratosphere. He said that in the coming months these data will help answer some of those questions.

Pepin said that the emissions could increase the concentration of the Earth's aerosol layer, but the magnitude of this ejection is not certain. If there is a large increase in the aerosol concentration, it could possibly affect the Earth's climate with important implications for agriculture.

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IMMEDIATELY

LANGLEY RESEARCH CENTER HONORS INVENTORS

Hampton, Va.--Thirty-three Langley Research Center inventors were honored for receiving United States patents in 1978, at the annual Inventor's Award Luncheon on May 17.

Awards were presented by Dr. Donald P. Hearth, Langley Director. Guest speaker for the luncheon was Gerald J. Mossinghoff, Deputy General Counsel for NASA.

Inventors who received awards are: Wilbur C. Heier and Melvin H. Lucy, for a molded composite pyrogen igniter for rocket motors; Walt C. Long and Milton L. Williams, for a non-destructive method of applying and removing instrumentation on airfoils; Dr. Willard W. Anderson and Nelson J. Groom, for a magnetic suspension and pointing system.

Donald L. Maiden, for a two dimensional wedge/translating shroud nozzle; Ernest E. Burcher, Dr. Stephen J. Katzberg and William L. Kelly, IV, for a device for measuring the contour of a surface; William J. Debnam, Jr., Dr. Carl L. Fales, Jr., and Dr. Roger A. Breckinridge, for a magnetometer with a miniature transducer and automatic scanning.

Donald E. Barthlome, for a collapsible corrugated horn antenna; David C. Grana and David P. Haynes, for a remote water monitoring system; Richard

N. Young, for a independent power generator; Dr. Paul L. Coe, Jr., for a supersonic transport; Leonard M. Weinstein, for a contrast enhancement and small detail blending of photographic images.

Dr. Vernon L. Bell, for a process for preparing thermoplastic aromatic polyimides; Dr. Robert C. Costen, for a smokestack-mounted airfoil; Vernon L. Alley, Jr., and Austin D. McHatton, for a method and apparatus for quantitatively measuring the handle of fabrics and other flexible materials.

Laurence J. Bement, for a totally confined explosive welding; Dr. Nelson W. Jalufka, Dr. Frank Hohl, and Michael D. Williams, for a volumetric direct nuclear pumped laser; Chris Gross, for a electrically scanned pressure sensor module with in situ calibration capability.

Dr. Joseph S. Heyman, for a psuedo continuous wave instrument; David F. Thomas, Jr., and Leon A. Williams, Jr., for a fluid velocity measuring device; Bruce Flagge, for a septic system liquid level control apparatus; and Otto Youngbluth, Jr., for a versatile laser doppler velocimeter burst simulator.

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For Release:

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IMMEDIATELY

CEM ASSOCIATES AWARDED NASA CONTRACT

Hampton, Va. --CEM Associates, 41 Research Road, Hampton, has been awarded a NASA contract to provide a fixed contraction and a test and model support section for installation in the National Transonic Facility (NTF) Wind Tunnel at NASA's Langley Research Center.

The fixed contraction and the test and model support section will provide the structure and aerodynamic surfaces required to maintain a uniform flow in the vicinity of a test model and to support a test model in the tunnels.

The NTF will be used to provide test data in the transonic speed range (Mach 0.2 to 1.2) with Reynolds Numbers as high as 120 million.

The value of this contract is estimated at approximately \$2.4 million. The contract will cover a period of 19 months and will be managed by the Langley Research Center.

NASA News

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RELEASE NO. 79-34

Keith A. Koehler
(804) 827-2934

For Release:

May 29, 1979

AERONAUTICS PROGRAMS FEATURED AT NASA VISITOR CENTER

Hampton, Va.--NASA's aeronautics programs will be featured in a special lecture presentation, titled "Aeronautics and Aeronautical Research within NASA," at 2 p.m. every Monday through Friday during June, at the NASA Langley Visitor Center.

The lecture will include an overview of the future of general aviation, commercial and military aircraft technology, including aerodynamics, propulsion systems and avionics. Group presentations are available by calling (804) 827-2855.

NASA's aeronautics and space technology programs account for about 12 percent of its total budget. Research includes short and vertical takeoff landing technology (STOL and VSTOL), avionics, propulsion systems, structural materials, flight control systems and future aircraft, focusing on performance, range, safety, economy, and environmental effects.

The aeronautics program is one in a series of special programs featured each month at the Langley Visitor Center. Future programs will include the Voyager 2-Jupiter encounter, the 10th anniversary of man's

landing on the moon and a special art exhibit by Kelly Freas, well-known science fiction artist. For information on these and other events, call the NASA Visitor Center, 827-2855.

The Visitor Center is open Monday through Saturday from 8:30 a.m. to 4:30 p.m., and Sunday from noon to 4:30 p.m.

NASA News

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For Release:

Keith A. Koehler
(804) 827-2934

May 31, 1979

NASA VISITOR CENTER TO PRESENT SCIENCE FICTION EXHIBIT

Hampton, Va.--The NASA Langley Visitor Center will present "Kelly Freas: A One-Man Science Fiction Art Show," during June and July. On exhibit will be 40 of Freas' paintings, which will be generally space related.

Freas, who lives in Virginia Beach, has won the World Science Fiction Convention's Hugo award for Best Professional Artist ten times, more Hugos than any other artist. He has been named Dean of Science Fiction Artists, a lifetime title, by the Eastern Science Fiction Association.

Freas' illustrations have shaped science fiction readers' views of other worlds for the last 25 years. A recently published sampling of his work and anecdote of his career, "Frank Kelly Freas: The Art of Science Fiction," has received considerable critical acclaim.

Mad Magaine readers will remember Freas for his interpretations of Alfred E. Newman, the imp on the cover of the magazine. Freas was also chosen by the NASA Skylab One astronauts to design the project uniform patch and by the rock group Queen to paint its latest album cover.

Kelly and Polly Freas are currently co-editing the new "Starblaze" series of large-sized paperbacks from Donning Company in Norfolk, Virginia.

A native of upstate New York, Freas grew up in southern Ontario, Canada. He did commercial artwork through high school and college, studying at Catholic University, Washington, D.C., Georgetown University, the Art Institute of Pittsburgh and other institutions.

He began his professional career with a Pittsburgh advertising agency, but soon followed his love for science fiction to a free-lance career in illustration, beginning with his first cover painting for the November 1950 issue of "Weird Tales."

NASA News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23665
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RELEASE NO. 79-36

For Release:

Jean Drummond
(804) 827-2934

June 4, 1979

OTTERBEIN AND JACKSON DISCUSS SHROUD OF TURIN

Hampton, Va.--Dr. Adam J. Otterbein, President of the Holy Shroud Guild of America, and Dr. John P. Jackson, Chief Scientist, American Shroud Research Team, will discuss the "Scientific Investigations of the Shroud of Turin," at the NASA Langley Research Center colloquium on Monday, June 11.

A news conference will be held at 1:15 p.m., in the Langley Activities Center, Building 1222. The lecture will begin at 2 p.m., followed by a brief question and answer session. At 3:30 p.m., the speakers will move to the adjoining Langley Room for an informal discussion.

Because of the increasing interest in the history of the Shroud, Otterbein and Jackson will give the same lecture in Ogden Hall, at Hampton Institute on Sunday, June 10, at 8 p.m. This lecture is sponsored solely by the Hampton Institute's Department of Physics and Chemistry and Department of Philosophy and Religion.

The first recorded showing of the linen artifact, now called The Shroud of Turin, was made in 1357 by the de Charney family of Lirey,

France. It was claimed to have been the burial cloth of Jesus Christ. The cloth bears the full body image of both the front and back of a man.

Ownership of the cloth passed from the de Charney family to the Royal family Savoy of Italy. The Shroud now resides in a silver case in the Hall of the Swiss of the Royal Palace, which is attached to St. John's Cathedral in Turin, Italy. In recent decades the Shroud has become of increasing interest to members of the world scientific community. Scientists hope to establish through modern scientific techniques answers to questions of the Shroud's origin and history prior to 1357.

Otterbein and Jackson will discuss the known history of the Shroud, review the reasons for its interest and describe the scientific investigations to date. In particular, they will describe the data which was gathered on October 29, 1978, by some 50 American and European scientists.

Otterbein studied at Mount St. Alphonsus Seminary in Esopus, New York, and received his Doctorate in Theology from Catholic University in Washington, D.C. While a student at the Seminary, Otterbein became interested in the Shroud. When he returned to the Seminary as a faculty member, Otterbein founded the Holy Shroud Guild of America. Under the direction of Cardinal Spellman, he established a center for the Guild at the Seminary. Otterbein is presently with the Holy Family Retreat in Hampton.

Jackson is Professor, Department of Physics, at the U.S. Air Force Academy, Colorado Springs, Colorado. He holds the rank of Captain in the U.S. Air Force.



NASA News

National Aeronautics and
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RELEASE NO. 79-37

For Release: June 15, 1979

Keith A. Koehler
(804) 827-2934

SEATS, ELTs STUDIED IN GENERAL AVIATION CRASH TEST

Hampton, Va.--Langley researchers will crash a twin-engine pressurized aircraft on June 20 as part of the Federal Aviation Administration/NASA general aviation crash test program.

The crash test will be closed to the public as a safety precaution, since four Falcon air-to-air rocket engines will be used to obtain the aircraft's desired velocity.

The full-scale test of the aircraft, using a swinging pendulum approach, will enable researchers to conduct further studies on the 7,800-pound aircraft's structure, seats, restraints and emergency locator transmitters.

The aircraft will be tested at a speed of 90 mph, a pitch angle of minus 30 degrees and a roll, yaw and angle of attack of zero degrees.

Researchers know that, for occupants to survive an aircraft crash, the fuselage must remain intact. If the cabin remains intact, then attention focuses on the integrity of the seat and restraint systems and on seat designs that, by

controlled stroking, or manner of movement, can increase the probability of survival and lessen the probability of injury.

In the upcoming test, the aircraft will be equipped with three modified standard seats and three test seats: a very rigid seat, a rocker motion load limiting seat and a ceiling mounted (wire bending) load limiting seat.

The first seat will be used to test rails that attach the seat to the cabin floor, and the other two seats will be tested to determine their effects on the force load mannequins receive in the crash.

The ceiling mounted seat, weighing about 20 pounds, is similar in design to a troop seat designed for Army helicopters. Two load limiters--with one-tenth-inch diameter wire located inside the seat back and attached to the cabin ceiling--limit both vertical and forward loads. Two additional load limiters, attached diagonally between the seat pan at the front and the floor at the rear, limit the forward loads.

The load limiters are designed to reduce the impact load transmitted to a passenger to a value that is tolerable. The seat pan remains parallel to the floor while stroking and the length of the stroke is approximately 12 inches vertical and seven inches forward. The load limiters provide a nearly constant force during stroking, making it possible to absorb maximum energy at human tolerance levels over a given stroking distance.

During initial dynamic tests of this seat at the FAA's Civil Aeromedical Institute in Oklahoma City in October 1978, dummy pelvis vertical accelerations were reduced up to 50 percent and horizontal pelvis accelerations were reduced up to 40 percent over standard seats.

The rocker motion seat, weighing about 40 pounds, uses a rocker swing stroke to change the attitude of the occupant from an upright seated position to a semi-supine position. This action theoretically redistributes vertical

impact forces on the seat pan traveling up the spine to a larger area on the seat back perpendicular to the spine.

The load limiters are located at the bottom of the legs and parallel to the floor from front to back.

Researchers will also conduct tests on two different types of emergency locator transmitters (ELTs).

Each ELT is equipped with a sensor that, upon impact, activates a transmitter. Acting as a locator for downed aircraft, the transmitter sends a signal on the air emergency frequency.

In the past, however, hard landings or door slammings caused numerous transmitter false alarms. Researchers are investigating the structural mounting, location, and orientation in the aircraft of the ELTs to alleviate false alarms and make the system more reliable.

One of the ELTs on the test plane will be mounted with an external antenna on the tail and the other will be mounted with the complete system in the aircraft's cabin. The ELTs' activation will be monitored by the researchers during the crash test.

Batteries for ELTs normally, after activation, have an operating capacity of 48 hours, therefore, the plane needs to be located quickly. When a plane is overdue at its destination, aircraft operators in the area are asked to turn to the emergency frequency to help locate the lost and possibly downed aircraft.

In the future, NASA will have a satellite that will continuously monitor the emergency frequency. In order for this concept to function efficiently, however, the ELT's performance must be made reliable and free from false alarms.

NASA News

National Aeronautics and
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Langley Research Center
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Ann 2

RELEASE NO. 79-47

For Release: August 2, 1979

H. Keith Henry
(804) 827-2934

NASA SCIENTIST ELECTED TO EXPLORERS CLUB

Hampton, Va.--A staff scientist at NASA's Langley Research Center has been elected a member of The Explorers Club, an international organization comprised of men of impressive achievements in diverse fields of exploration.

Dr. Jag J. Singh, of Langley's Instrument Research Division, was selected because of his work in "environmental and optical research relevant to NASA missions." Singh's distinguished scientific career has earned him the special designation of "fellow" in the club.

As a Langley staff scientist, Singh gives technical advice to the chief of the Instrument Research Division on all instrumentation problems encountered in the division. He also selects and demonstrates new theoretical concepts for more accurate measurements in Langley laboratories and acts as general technical consultant to senior Langley managers in mathematical and radiation physics.

The Yorktown resident began his NASA career in 1964 when he came to Langley from the College of William and Mary, where he was an associate professor of physics. He has specialized in atomic and molecular spectroscopy, materials research (solid state physics), nuclear and radiation physics and acoustics.

Singh, 53, was born in India, where he received a bachelor's degree in physics and mathematics. He then attended Liverpool University in England, where he received a doctorate in 1956. Seeking a country more oriented toward scientific research, he came to the United States shortly thereafter and became a U.S. citizen in 1971.

The Explorers Club, founded in 1904, has an international membership of about 2,700 explorers, scientists and others noted for their contributions to world knowledge. Notable members include Neil Armstrong, Sir Edmund Hillary, Thor Heyerdahl, James Fowler, Russell Train, John Glenn, the Duke of Edinburgh, and several Nobel laureates. Its headquarters are in New York City and it maintains a well-known club in London.

Membership is by invitation only. Singh, who is a member of several purely scientific societies, accepted membership in the widely divergent Explorers Club, in part, to learn what ideas an accomplished mountain climber, for example, might propose in solving energy problems.

The club's activities have expanded from its original emphasis on geographical exploration. Present horizons include discoveries in both field and laboratory, research into mankind's past and the challenges of space. Its goal, however, remains unchanged: "Opening new frontiers, pursuing knowledge for the benefit of mankind...and encouraging and stimulating both independent and institutional exploration."

NASA News

National Aeronautics and
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RELEASE NO. 79-51

For Release: September 6, 1979

Jean Drummond
(804) 827-2934

CROUCH RECEIVES NASA FELLOWSHIP

Hampton, Va.--Dr. Roger K. Crouch, an aerospace technologist in the Electronic Devices Research Branch, Flight Electronics Division, at NASA's Langley Research Center in Hampton, Va., has been awarded the Floyd L. Thompson Fellowship.

The Thompson Fellowship Program was established in 1977 to encourage the development of research potential among the Center's staff. It is named in commemoration of Dr. Floyd L. Thompson, 1898-1976, who was Center Director from 1960-1968.

Crouch will spend one academic year at the Massachusetts Institute of Technology studying the effects of gravity on semiconductor crystal growth and materials processing in space.

Crouch joined the Langley staff in June 1962. He earned a bachelor of science degree in physics in 1962 from Tennessee Technological University, a master of science degree in physics in 1968 and a doctor of philosophy degree in physics in 1971 from Virginia Polytechnic Institute and State University.

The author of over 20 technical publications, Crouch is a member of the American Physical Society.

He has a daughter, Melanie, 11, and two sons, Kevin, 8, and Kenyon, 4.

NASA News

National Aeronautics and
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Hampton, Virginia 23665
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RELEASE NO. 79-52

For Release: September 12, 1979

Jean Drummond
(804) 827-2934

KLATE HOLT COMPANY CONTRACT MODIFIED

Hampton, Va.--The Klate Holt Company, Hampton, Va., has been awarded a modification to its contract to provide facility and equipment maintenance support services to NASA's Langley Research Center.

Some of the areas serviced and maintained under the contract are: refrigeration and air conditioning systems; electrical systems; rigging services; building trades services; engineering services; and equipment maintenance.

This modification will provide additional man-hours and materials needed to perform the required work.

The value of this modification is approximately \$1.5 million, bringing the total value of this contract, awarded in 1978, to \$15.4 million.

NASA News

National Aeronautics and
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Hampton, Virginia 23665
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For Release:

September 14, 1979

NOTE TO EDITORS - LANGLEY TRANSPO '79 SPOTLIGHTS ENERGY EFFICIENCY

Hampton, Va.--Promoting small-scale mass transit among NASA employees is the goal of Transpo '79, a special program scheduled for September 20 at the Langley Research Center.

Designed to promote various forms of car pooling and energy efficient transportation among regular and contract employees, the Transpo will feature talks, demonstrations and computer polling.

Among several speakers will be Joseph Kursch of EASYRIDE, a Peninsula federally-funded transportation organization, who will discuss using a computer to plot the addresses of persons interested in mass transit.

Jo-Anne Beal of the Tennessee Valley Authority will be on hand to discuss the TVA's extensive experience with van pooling. Langley Deputy Director Oran Nicks will also speak at Transpo's two sessions.

Transpo will feature a live telephone conference between a group of van-poolers in Los Angeles known as the Conejo Commuters and those attending the session.

Langley employees will lead discussions on the use of bicycles and motorcycles, and van pool drivers from the Naval Supply Center in Norfolk will share their experiences.

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All panel discussions will be held twice during the day in the Hampton and Langley rooms of the main auditorium of the Activities Center on Ames Road. Displays will be set up in the lobby.

Several types of vans, motorcycles, mopeds, bicycles and Pentran and Newton buses will be parked in front of the Center.

Media representatives are invited to attend the Transpo sessions, which will be held from 10 a.m. to noon and 1 p.m. to 3 p.m.

A handwritten signature in cursive script that reads "Brian Welch".

Brian Welch
Public Information Specialist (Trainee)

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NASA News

National Aeronautics and
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Hampton, Virginia 23665
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RELEASE NO. 79-54

For Release:

Maurice Parker
(804) 827-2934

September 17, 1979

NASA VISITOR CENTER HAS NEW MANAGER

Hampton, Va.--The Bionetics Corporation of Hampton has been awarded a three-year contract to operate the Visitor Center at NASA's Langley Research Center.

George E. Hicks, former Director of the Casemate Museum at Fort Monroe, is new director of the NASA Visitor Center for Bionetics. Hicks heads a staff of 10 people, including a programs manager, a public relations specialist, lecturers, tour guides and support workers.

Hicks and his staff will be responsible for planning and managing programs of lectures, tours and special events for area residents and students, special groups of visitors and Peninsula tourists.

Hicks is a past chairman of the Peninsula Museums Forum and is active in the Virginia History and Museums Federation and the American Association of Museums. He is conducting a series of monthly seminars on professional museum work, sponsored by George Washington University's Tidewater Center.

He is a 1969 graduate of Virginia Polytechnic Institute, with a bachelor of arts degree in history, and he has completed course requirements for a master's degree in history.

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The Visitor Center provides an opportunity for the public to see what NASA and the Langley Research Center are doing in the fields of aeronautical and space technology research. Displays, exhibits, films and lecturers--plus actual test and flight hardware--are available for groups, families and individuals.

The Visitor Center complex includes NASA's Technology Utilization House, a contemporary-style home equipped with energy-saving systems that use NASA-developed technology now available to the general public.

The Visitor Center is open seven days a week, from 8:30 a.m. to 4:30 p.m. Monday through Saturday, and noon to 4:30 p.m. Sunday.

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NASA News

National Aeronautics and
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RELEASE NO. 79-55

For Release:

Jean Drummond
(804) 827-2934

September 17, 1979

BUCKLEY TO SPEAK ON SEPTEMBER 27

Hampton, Va.--William F. Buckley, Jr., author, editor and lecturer, will be the guest speaker for the "Our Future in the Cosmos" public lecture on Thursday, September 27.

The lecture entitled "Some of the Problems of Freedom," will be at 8 p.m. at the Hampton Coliseum. This is the first lecture in the 1979-80 "Our Future in the Cosmos" series, sponsored by NASA and the College of William and Mary. Admission is free on a first-come basis. No tickets will be distributed for this lecture.

In his talk, Buckley will express his views on "why the usual defenses of the free marketplace are never enough." He will present his analysis of some of the major economic views and prejudices of the public. An outspoken critic of certain economic and political policies, Buckley will also present his views on topics which concern the general public, business and governmental leaders.

Buckley, host of the weekly television program, "Firing Line," is an articulate and penetrating speaker on national and international problems. He

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is founder of the magazine National Review and he writes a weekly column, "On the Right," which is syndicated in over 300 U.S. newspapers.

Buckley earned his bachelor of arts degree in political science, economics and history from Yale University in 1950 and has received 15 honorary degrees. He was presented the Best Columnist of the Year Award in 1967; University of Southern California's Distinguished Achievement Award in Journalism in 1968; the television Emmy for Outstanding Program Achievement in 1969; Cleveland Amory (TV Guide) Award for Best Interviewer/Interviewee on Television in 1974; and Bellarmine Medal in 1977.

The author of more than 15 books, including Up From Liberalism and Four Reforms, Buckley has contributed articles to many American periodicals.

NOTE TO EDITORS

Buckley will give the same lecture at the Langley colloquium that afternoon in the Activities Center, Building 1222. A news briefing will be held at 1:15 p.m., and the lecture will begin at 2 p.m., followed by an informal discussion.

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NASA News

National Aeronautics and
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RELEASE NO. 79-56

For Release:

Jean Drummond
(804) 827-2934

September 19, 1979

LANGLEY RESEARCH CENTER EMPLOYEES RECEIVE ADVANCED DEGREES

Hampton, Va.--Eighteen Langley Research Center employees have received advanced degrees through the Center's Graduate Study Program during Fiscal Year 1979.

The program, established in the late 1940s, provides Langley scientists, engineers and administrators an opportunity to improve their proficiency in aeronautical and space research and earn advanced degrees while working at Langley. Approximately 778 employees have been awarded masters or doctorate degrees through the program.

Doctorate degrees have been awarded to these five employees: Dave E. Eckhardt, Jr., Analysis and Computation Division, Doctor of Science in Computer Science, George Washington University; Howard L. Price, Jr., Materials Division, PhD in Mechanical Engineering and Mechanics, Old Dominion University; R. Clayton Rogers, High-Speed Aerodynamics Division, and Clyde K. Barton, Acoustics and Noise Reduction Division, PhD in Mechanical Engineering, North Carolina State University; and James R. Schiess, Analysis and Computation Division, PhD in Biostatistics, Virginia Commonwealth University.

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Masters degrees were awarded to 13 employees: Nettie D. Faulcon, Instrument Research Division, Acoustics; Patricia L. Sawyer, Structures and Dynamics Division, Computer Science; Edwin J. Prior, Atmospheric Environmental Sciences Division, Information Systems Technology; John R. Dagenhart, Systems Engineering Division, Fluid Mechanics and Thermal Sciences; and James L. Rogers, Jr., Structures and Dynamics Division, Administration, all from George Washington University.

John P. Raney, Acoustics and Noise Reduction Division, and Joseph C. Moorman, Flight Dynamics and Control Division, Master of Business Administration; and Clayton H. Bair, Instrument Research Division, Master of Science in Physics, all from the College of William and Mary. Pamela F. Bradley, Space Systems Division, Master of Science in Aeronautical/Astronautical Engineering, Ohio State University.

William G. Chapin, Instrument Research Division, Master of Engineering; W. Douglas Morris, Marine and Applications Technology Division, Master of Science in Oceanography; Gilbert A. Haynes, Flight Electronics Division, Physics; and Dennis H. Petley, Systems Engineering Division, Mechanical Engineering and Mechanics, all from Old Dominion University.

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NASA News

National Aeronautics and
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Jean Drummond
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For Release:
September 25, 1979

NASA CEREMONY HONORS 30-YEAR SERVICE EMPLOYEES

Hampton, Va.--A service awards ceremony honoring 30-year service employees will be held at NASA's Langley Research Center on October 2, at 1:30 p.m., in the Activities Center, Building 1222.

Dr. Donald P. Hearsh, Langley Director, will present service emblems and certificates to the following employees:

FABRICATION DIVISION: Gary K. Ballard; A. Edgar Barker; John H. Belveal; William N. Branch; Mercer W. Christian, Jr.; Clarence M. Cole; Billy B. Dancy; Durwood W. Davis; Charles E. Edmiston; Robert E. Graham; Charles W. Hopkins; Oscar Jennings; George O. Kent; and Charles R. Lewis.

SYSTEMS ENGINEERING DIVISION: Briscoe B. Brown, Jr.; Charles S. Gilliland; James M. Henry; Carol C. Kiser; Robert F. Mayer; Clarence A. Robins, Jr.; Erskine C. White; and Richard T. Wilem.

OPERATIONS SUPPORT DIVISION: William E. Cole; Kenneth W. Crocker; Moody J. Firman, Jr.; Roy E. Henley; Spencer V. Inge, Jr.; Horace W. Jones; Ralph E. Maston; James P. O'Briant, Jr.; George F. Palko; Junie F. Upton; and William H. Verser.

OFFICE OF SYSTEMS SAFETY, QUALITY AND RELIABILITY: William L. Ervi, Jr.

OFFICE OF NATIONAL TRANSONIC FACILITY PROJECT: Howard L. Evans.

more

PLANT ENGINEERING DIVISION: Ernest E. Mason; Rupert R. Monahan; George R. Poole; and Willie T. Scott.

RESEARCH FACILITIES ENGINEERING DIVISION: Alfred C. Watkins.

AERONAUTICAL SYSTEMS DIVISION: Hal T. Baber, Jr.

HIGH-SPEED AERODYNAMICS DIVISION: Harry W. Carlson; John S. Evans, Jr.; Mary S. Roberts; and Charles D. Trescot, Jr.

SUBSONIC-TRANSONIC AERODYNAMICS DIVISION: Elden S. Cornette and Billie J. Walker.

FLIGHT MECHANICS DIVISION: Norman L. Crabill; Earl C. Hastings, Jr.; and Merle S. Ott.

STRUCTURES AND DYNAMICS DIVISION: William D. Deveikis; George F. Klich; Harvey G. McComb, Jr.; Richard H. Rhyne; Charles L. Ruhlin; Victor L. Vaughan, Jr.; and E. Carson Yates, Jr.

MATERIALS DIVISION: Eldon E. Mathauser.

ACOUSTICS AND NOISE REDUCTION DIVISION: Conrad M. Willis.

FLIGHT ELECTRONICS DIVISION: Charles L. Breckinridge; Paul W. Culotta; Henry S. Earl, Jr.; Russell K. Nevins; and Herbert F. Thornton.

INSTRUMENT RESEARCH DIVISION: Opal G. Davis.

ANALYSIS AND COMPUTATION DIVISION: Willianna W. Smith.

FLIGHT DYNAMICS AND CONTROL DIVISION: James L. Williams.

SPACE SYSTEMS DIVISION: George C. Ashby, Jr.; Peter T. Bernot; Davis H. Crawford; and Lloyd S. Keafer, Jr.

OFFICE OF DIRECTOR FOR SPACE: Fred M. Smith.

MARINE AND APPLICATIONS TECHNOLOGY DIVISION: Beverley W. Lewis and Dewey E. Wornom.

OFFICE OF OCCUPATIONAL HEALTH SERVICE: Betty H. Downing and Julia K. Stainback.

more

OFFICE OF PATENT COUNSEL: Wallace J. Nelson.

SCIENTIFIC AND TECHNICAL INFORMATION PROGRAMS DIVISION: Myrtle W. Yates.

SCOUT PROJECT OFFICE: Joseph F. Dixon and Edith R. Horrocks.

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NASA News

National Aeronautics and
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RELEASE NO. 79-60

For Release:

Jean Drummond
(804) 827-2934

October 8, 1979

ENGINEERING TECHNICIANS TO GRADUATE

Hampton, Va.--Dr. Thomas S. Kubala, President of Thomas Nelson Community College, will be the keynote speaker at the Thirty-fifth Annual Completion Exercises for Engineering Technicians at NASA's Langley Research Center on Friday, October 12, at 1:30 p.m. in the Activities Center, Building 1222.

Dr. Donald P. Hearsh, Director of the Langley Research Center, will preside at the ceremony and will also give special recognition to the honor graduates. Howard W. Wilson, Jr., Chaplain of the class of 1979, will give the invocation.

Robert D. Springfield, Engineering Technician, will be the speaker for the class and Malcolm P. Clark, Head of the Training and Educational Services Branch, Personnel Division, will present the certificates. Special music will be provided by the United States Continental Army Band under the direction of Sgt. Maj. Robert J. Faller.

The graduates and their trades are as follows:

Engineering Technicians (Mechanical Development), Fabrication Division:
William C. Alexander; Archerbald J. Epps, III; Michael G. Fleck; Mark S. Lindsey; and Kevin G. Meidinger.

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Electronics Technicians, Fabrication Division: James M. Arbuckle; Clarence W. Bailey; Harold W. Beazley; James E. Bell, Jr.; Michael M. Mahler; Dennis L. Mowrey; Alexander J. Witkowski; and Mark W. Wynkoop.

Engineering Technician (Fabrication Development), Fabrication Division: Kyle R. Ballew, Jr.

Engineering Technicians (Aerospace Model Development), Fabrication Division: Charles E. Caldwell and Howard W. Wilson, Jr.

Engineering Technicians (Research Facilities Operations), Operations Support Division: Glenn A. Brehm; Ricky L. Clark; William R. Loudermilk; Lloyd R. Marks, Jr.; Earl J. Mathis, Jr.; William J. McCabe; Charles A. Poupard; Lawrence C. Reed; Ricky E. Smith; Robert D. Springfield; George L. Willis; and Kenneth C. Young.

Electronics Technicians, Flight Electronics Division: Harold K. Carney, Jr., and Berkley A. Langford, Jr.

Engineering Technician (Systems Environmental Specialist), Operations Support Division: David J. Gordinier.

Electronics Technician, Instrument Research Division: Morris C. Hood.

Electrical Engineering Technician, Operations Support Division: George E. Lockard.

Aerospace Engineering Technician, Flight Mechanics Division: Paul R. Pfeffer.

Honor graduates are: Harold K. Carney, Jr., and Paul R. Pfeffer, Summa Cum Laude; James M. Arbuckle, George L. Willis, Howard W. Wilson, Jr., Robert D. Springfield and William C. Alexander, Magna Cum Laude; and Dennis L. Mowrey, Mark W. Wynkoop, William R. Loudermilk, Alexander J. Witkowski, Michael M. Mahler, Lloyd R. Marks, Jr., and Glenn A. Brehm, Cum Laude.

Kubala, a native of Johnson City, New York, earned a bachelor of science degree from Rochester Institute of Technology in 1961 and a master of science degree from State University of New York at Oswego in 1967. He received a doctor of education degree from the University of Maryland in 1977.

His career as an educator began in 1961 at Broome Community College in Binghamton, New York, where he served as Assistant Professor of Electrical Technology and later as Associate Professor.

In 1968 Kubala was named Associate Professor and Director of Electrical Engineering Technology at Anne Arundel Community College in Arnold, Maryland. He also served as Chairman of the Division of Engineering Technologies, Dean of Career Programs, Dean of Continuing Education, Dean of the Faculty and Dean of the College.

He was appointed President of Thomas Nelson Community College in February 1979.

The author, coauthor or contributing author of eight textbooks, Kubala is a consultant for educational institutions and publishing companies. He has served as an evaluator for regional accreditation of colleges.

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NASA News

National Aeronautics and
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RELEASE NO. 79-63

For Release:

Jean Drummond
(804) 827-2934

October 18, 1979

NASA HONORS EMPLOYEES AT AWARDS CEREMONY

Hampton, Va.--Robert F. Allnutt, NASA Associate Deputy Administrator, will be the guest speaker for the Annual Honor Awards Ceremony at NASA's Langley Research Center on Thursday, October 25. The ceremony will be held at 2:30 p.m. in Building 1244 (Hangar).

Langley Awards will be presented to the following:

Forty Years' Service: Francis R. Dreisbach; Margery E. Hannah; Lee E. McDaniel, Jr.; Floyd S. Rogers, Jr.; John P. Tribble; and Harper E. Van Ness.

Thirty-Five Years' Service: George Adamowski; Eugene K. Allen; Ralph P. Bielat; H. Benjamin Bland, Jr.; William J. Block; Herbert E. Boulter; Joseph D. Brooks; Harry W. Broskie; John F. Bryant, Jr.; Kenneth S. Bush;

William A. Carmines; Baxter C. Carr, Jr.; Wade E. Cason, Jr.; Ambrose O. Christian; Claude W. Coffee, Jr.; John N. Daniel; Ernest Dennis, Jr.; Andrew C. Dibble, Jr.; Barbara J. Durling;

Charles E. Feller; Charles E. Fiorella; Paul G. Fournier; Roger H. Fournier; Beulah R. Garel; H. Douglas Garner; Paul B. Gooderum; Walter L. Gregory;

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Herbert F. Hardrath; Lowell E. Hasel; James L. Hassell, Jr.; Clyde Hayes;
Edward L. Hoffman; James W. Huggett; Donald A. Johnson; Joseph L. Johnson, Jr.;
Leo J. Johnson, Jr.; Harold H. Jordan;

Edwin C. Kilgore; E. Bernard Klunker; John E. Knemeyer; Dr. Edwin T.
Kruszewski; Raymond V. Leatherman; Donald A. Lietzke; Edward C. Lingelfelser;
Harold R. Long;

George J. Magnus; Kenneth Margolis; James F. McNulty; James L. Miller;
David L. Morris; Thomas C. O'Bryan; James P. Peterson; M. John Pilny; Edward
C. Polhamus;

Dr. Manuel J. Queijo; Alphanzo M. Rackley; Ernest L. Rowe; Irvin C. Rowe;
Alberta R. Saunders; Edna I. Scott; Robert E. Shanks; William C. Sleeman, Jr.;
Eunice G. Smith;

Lloyd E. Smith; Nathaniel R. Spaulding; M. Leroy Spearman; Albert B.
Stacey, Jr.; Jane A. Swartzwelder; Lisle E. Taylor; Louis P. Tosti;

Charles N. Valade; Henry P. Watkins; Robert P. Weaver; Barbara L. Weigel;
Leon A. Williams, Jr.; Brady D. Wooddell; and William H. Young, Sr.;

Technology Utilization Award: Andronicos G. Kantsios.

Equal Employment Opportunity Award: Marvin F. Burgess and John J. Cox.

Outstanding Volunteer Award: David F. Johnston, Robert P. Weston, and
James R. Williams.

Public Service Award: Louis Kanegis and William H. Pickens.

H. J. E. Reid Award: William P. Gilbert, Luat T. Nguyen and Roger W.
Van Gunst.

Special Achievement Awards for Contributions: Emanuel Boxer; Thomas L.
Coleman; Irene B. Collins; Leonard Credeur; Billy L. Dove; James J. Fay;
Luther R. Gentry; William P. Gilbert; James S. Hicks; W. Linwood Jones, Jr.;

William B. Kemp, Jr.; Frederick A. Kern; Dr. Edwin T. Krunzewski;
Sumner A. Leadbetter; Robert B. Lee, III; Ernest Eugene Mason; Eldon E.
Mathauser; M. Patrick McCormick; Dr. Clemans A. Powell; A. Warner Robins;
Richard B. Rountree; Louis F. Vosteen and David C. Woods.

Eighteen Group Achievement Awards will also be presented.

NASA Headquarters Awards will be presented at the Langley ceremony
as follows:

Exceptional Scientific Achievement Medal: Dr. Joseph Veverka, of
Cornell University.

Exceptional Service Medals: Edwin F. Harrison; Beverly Z. Henry, Jr.;
Dr. Joseph S. Heyman; William D. Mace; James M. Patton, Jr.; Wilmer H.
Reed, III; Vernon W. Saunders; Jane A. Swartzwelder and George E. Sweet.

Equal Employment Opportunity Medal: Edward A. Howe.

Group Achievement Award: Limb Infrared Monitor of the Stratosphere
Development Team; Scout Launch Vehicle Project Team; and Valt Control and
Display Integration Team.

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RELEASE NO. 79-65

For Release:

Maurice Parker
(804) 827-2934

IMMEDIATE

KENTRON DIVISION AWARDED SUPPORT CONTRACT TO NASA-LANGLEY

HAMPTON, Va.--The Hampton Technical Center, a division of Kentron International, Inc., of Dallas, Texas, has been selected to provide technical support work for research and development programs at NASA's Langley Research Center.

The two-year contract is a continuation of previous contracts with Kentron and is valued at approximately \$24 million. Contract options could extend the contract an additional two years.

The technical support work will be done in these areas: Terminal Configured Vehicle Program, instrumentation, space missions and applications, static and dynamic structural analysis, aircraft operations, data reduction, mechanical design for ground simulators and flight vehicles, aeronautical systems support, materials research, programming, computer structural methods technology, pyrotechnics and atmospheric pollutants.

Most of the work will be done at the Hampton Technical Center, with certain special tasks done at Langley.

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RELEASE NO. 79-66

For Release:

Brian Welch
(804) 827-2934

IMMEDIATELY

NEWPORT NEWS FIRM GETS NASA CONTRACT RENEWAL

Hampton, Va.--Modern Machine and Tool Company, Inc., 11844 Jefferson Avenue, Newport News, has been awarded a \$1 million contract for the continuation of services to the NASA Langley Research Center.

Modern Machine first received the NASA contract in November, 1976, and since then has been servicing Langley measuring instrumentation and equipment. The contract, which specifies the continuation of strain and force measuring instrumentation services from October 1, 1979 to September 30, 1980, contains an option for a one-year renewal. The services will be performed at Modern Machine's facility in Newport News.

The total dollar value of the NASA/Modern Machine contract is over \$2.3 million.

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RELEASE NO. 79-67

For Release:
IMMEDIATELY

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(804) 827-2934

UNIVERSITIES SPACE RESEARCH ASSOCIATION GETS ICASE CONTRACT

Hampton, Va.--Universities Space Research Association, Columbia, Maryland, has been awarded a \$1.2 million contract to operate the Institute for Computer Applications in Science and Engineering at the Langley Research Center.

USRA, a nonprofit consortium of around 50 major U.S. colleges and universities, has operated ICASE in conjunction with the Langley Research Center since the program's inception in 1972. The latest contract extends USRA's operations another 36 months.

ICASE was formed to provide a mechanism by which cooperative research efforts of government, industry and academic institutions can be carried out. The Institute serves as a center of research in the areas of applied mathematics, computer science and the application of computers to scientific and engineering problems of concern to the Center.

Research projects have been primarily performed by visiting university faculty, postdoctoral fellows and term appointees from the various scientific and mathematical disciplines. ICASE research has generally fallen into three major categories: numerical methods, with particular emphasis on the development and analysis of basic numerical algorithms; computational problems in engineering and the natural sciences; and computer systems and software, with emphasis on microcomputers, computer graphics and data management.

END

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RELEASE NO. 79-81

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November 13, 1979

NUCLEAR ENERGY DEBATE FEATURED AT HAMPTON COLISEUM

Hampton, Va.--Both sides of the nuclear energy issue will be debated at the "Our Future in the Cosmos" public lecture on Monday, November 19.

Dr. Carl Walske, President of the Atomic Industrial Forum in Washington, D.C., will present "A Case for Nuclear Energy." Stuart Diamond, energy and environmental writer for the newspaper Newsday, will present "A Case Against Nuclear Energy."

The debate, moderated by Thomas N. Downing, former United States Congressman, will be at 8 p.m. at the Hampton Coliseum. The public lecture series is sponsored by NASA and the College of William and Mary. Free tickets are available at the Coliseum box office.

The speakers will express their views on the controversial question of nuclear energy. They will discuss energy requirements, safety, economic factors, alternative energy sources, conservation and citizen involvement in the decision-making process.

Walske's career in the nuclear energy field includes positions in research, management and international activities. Prior to his present position, he served as the principal staff officer and advisor on nuclear matters to four

more

Secretaries of Defense. He was also responsible for liaison with the Atomic Energy Commission and the Joint Committee on Atomic Energy.

Diamond is a Pulitzer Prize nominee for his coverage of events at Three Mile Island. He is the co-author of It's In Your Power, an anti-nuclear energy book that advocates low technology, conservation, alternative energy sources and more citizen involvement.

NOTE TO EDITORS

Walske and Diamond will also present their cases at the Langley colloquium that afternoon in the Activities Center, Building 1222. A news briefing will be held at 1:15 p.m., and the lecture will begin at 2 p.m.

END

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207

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For Release: IMMEDIATE

Release No. 79-85

STUDY FINDS CARBON FIBER RISK "INSIGNIFICANT"

The release of carbon fibers from civil aircraft accidents will cause only insignificant damage to electrical equipment, according to a 22-month study of the potential problem.

Results from the NASA analysis were reported this week during a Carbon Fibers Hazard conference at NASA's Langley Research Center, Hampton, Va.

At the same meeting, representatives of several government agencies and private companies presented technical papers and oral reports on various aspects of a continuing government study of the potential use of carbon fibers.

R.R. Heldenfels, Langley's Director for Structures, summarized the NASA study results by saying, "The public risk from using carbon fibers on current and future civil aircraft in the United States is very small."

Carbon or graphite fibers are small-diameter filaments used to make composite materials; composites are formed when fibers are embedded in a plastic matrix to form a solid material. Composites are being used increasingly in aircraft because of their high strength, durability, improved performance factors and light weight.

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December 7, 1979

Composites are also used in many commercial products, from recreation to industrial equipment. With a growing demand for composites, the government became concerned about potential accidental release of the fibers. The potential risk stems from the reaction of most composite structures to burning, which causes the composites to break down and release short lengths of fibers into the atmosphere. Considered to be highly heat-resistant and electrically conductive, the fibers were first thought to be very damaging to electrical equipment. Because of their extreme lightness, fibers can possibly float for miles, settle on electrical equipment, and sometimes cause short circuits or equipment malfunction.

"The study had to be done," says Robert Huston of Langley, chief of the NASA Graphite Fibers Risk Analysis portion of the government study. "If the earlier concern had materialized, there was a good chance that carbon fiber applications throughout the country would have been seriously impacted."

In July 1977, the Director of the Office of Science and Technology Policy was directed by the President to conduct a study of carbon composite materials, analyzing potential problems and providing a plan for possible federal action.

Preliminary analysis of the situation determined that the greatest potential for release was either during manufacture of composite materials or when carbon composites were burned. In a government-wide study of the issue, headed by the Office of Science and Technology Policy, NASA was assigned the specific task of assessing the risks in the civil aviation field.

A Graphite Fibers Risk Analysis Program Office was established at Langley, supported by NASA's Ames and Johnson Centers and the Jet Propulsion Laboratory. Valuable support to the NASA study was provided by the National Bureau of Standards, several Department of Defense laboratories and private aerospace and research companies.

Other government agencies involved in various aspects of the total government study include the Departments of Commerce, Transportation and Energy, and the Environmental Protection Agency. Their representatives also reported on the status of their research at the Langley conference.

An example of the kind of research conducted during the NASA study was a test series at the U.S. Army's Dugway Proving Ground in Utah. Begun in the fall of 1979, the tests were meticulously designed to recreate an aircraft fuel fire. Actual composite parts were burned with jet aircraft fuel for 20-minute periods, the length of the average aircraft fire.

A test apparatus called a Jacob's Ladder was devised to determine the rate of release of carbon fibers from a composite burn site. Jacob's Ladder is a giant, moveable net--305 meters (1,000 feet) square--vertically suspended in air by large balloons and guy wires. The device was located 152 meters (500 feet) downwind of the burn site.

More than 500 sampling instruments were installed on Jacob's Ladder. Another 1,600 ground samplers were scattered around the burn area to a distance of 23 kilometers (14 miles). The most complex samplers, located on the net, were eight high-voltage grids that counted each fiber's contact with the electrical field and measured the electrical resistance of the fibers. This allowed researchers to obtain a constant readout on the flow rate and the characteristics of the fibers.

The most important conclusion from five burn tests at Dugway was the confirmation of previous laboratory tests that showed less than one percent of the fibers are released in a typical aircraft crash fire. Two years ago, the estimate was 20 to 40 percent.

A small percentage of the epoxy matrix in the composites was converted under heat to a carbon char, which bound masses of fibers together, keeping

them from drifting with the smoke plume. Between 50 and 70 percent of the fibers in the composite material remained because of the carbon char binding. Substantial portions of the remaining fibers were burned away.

Detailed analysis by Langley researchers of information on electrical equipment revealed these additional facts:

- o Many kinds of commercial electrical equipment have conformal coating on circuit boards, insulating them from fiber shorting. (Conformal coating is a process in which circuits are dipped in an epoxy-like substance that makes them virtually fail-safe against short circuits.)

- o Most companies that have critical computer controls routinely place them in highly filtered and air conditioned rooms that also protect equipment from penetration by fibers.

- o Airborne carbon fibers, released when aircraft composites burn, are not a significant risk to industrial equipment, television sets and stereo equipment.

- o Common 110-volt motors and household appliances are almost invulnerable to carbon fibers.

Researchers even discovered that fiber-induced malfunctions in some equipment can be corrected merely by using a vacuum cleaner to remove fibers.

After almost two years of research, NASA results indicate that the risk of using carbon fiber composites in civil aircraft is insignificant. The loss to the U.S. economy--by the early 1990's--of the accidental release of fibers from aircraft crash fires is expected to be about \$1,000 a year. The expected loss is far exceeded by the benefits to the nation from reduced fuel usage by aircraft built with carbon fiber composites.

Reports presented at the Langley conference will be compiled and published in March 1980.

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Release No. 80-6

O'NEILL TO SPEAK AT HAMPTON COLISEUM FEBRUARY 12

Hampton, Va.--Dr. Gerard K. O'Neill, physicist, author and lecturer, will be the guest speaker for the "Our Future in the Cosmos" public lecture at 8 p.m. February 12 in the Hampton Coliseum.

O'Neill's lecture, "The High Frontier," will focus on concepts for using space resources for the benefit of humankind. O'Neill's will be the third lecture in the 1979-80 "Our Future in the Cosmos" series, sponsored by NASA and the College of William and Mary. Free tickets are available at the Coliseum box office.

O'Neill's ideas for constructing industrial facilities and communities in space have generated serious government, industry and academic studies since they were first popularly introduced in a 1974 "Physics Today" article. His subsequent book, "The High Frontier," won the Phi Beta Kappa award for best science book of 1977.

His concepts center on the use of lunar and other non-terrestrial (such as asteroids) materials for the construction of huge spaceborne colonies and solar energy satellites. By the middle of the next century, he predicts, thousands of people will be living and working in space, and many present-day energy problems will probably have been eliminated by using power from the sun. Slides and film clips will be used to illustrate his presentation.

O'Neill, a Professor of Physics at Princeton University, has been exploring these concepts for more than a decade. His visibility has increased with public interest in his ideas, making him a popular subject for articles, television talk shows and hundreds of appearances all over the world.

O'Neill has been teaching physics at Princeton since 1954. He is an expert in high-energy particle physics and the inventor of the colliding-beam storage ring now used in almost all international particle accelerators.

O'Neill earned his bachelor of arts in physics from Swarthmore College in 1950, and his Ph.D. in physics from Cornell University in 1954. He has addressed several Congressional committees on his concepts, and is president of the Space Studies Institute. He is a private pilot who also enjoys gliding, and is one of a handful of glider pilots who have earned the International Diamond Badge for soaring.

NOTE TO EDITORS

O'Neill will give the same lecture at the Langley colloquium the afternoon of February 12 in the Activities Center, Building 1222. A news briefing will be held at 1:15 p.m., and the lecture will begin at 2 p.m.

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RELEASE NO. 80-14

FOUR TOP MANAGERS LEAVE NASA-LANGLEY

Hampton, Va.--Four top managers at the Langley Research Center left NASA service February 29. They are Oran W. Nicks, Deputy Director; Dr. John E. Duberg, Associate Director; Richard R. Heldenfels, Director for Structures; and James E. Stitt, Director for Electronics.

Nicks resigned to become Executive Director of the Research Foundation at Texas A&M University. Duberg, Heldenfels and Stitt, who began their government careers in the 1940s with NASA's predecessor agency, the National Advisory Committee for Aeronautics, have retired from Government service.

Deputy Director at Langley since 1970, Nicks has served as General Manager of the Center, responsible for directing various research and technology activities and for institutional management of all facilities and equipment.

Before coming to Langley, Nicks worked at NASA Headquarters from 1960, where he was responsible for such unmanned space flight programs as Ranger, Surveyor, Lunar Orbiter, Mariner and Pioneer, plus other space science, space applications and advanced research and technology programs.

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Nicks earned a bachelor of science degree in mechanical engineering from the University of Oklahoma in 1948, and he studied aeronautical engineering at the University of Texas and the University of Southern California. He attended the Federal Executive Institute in 1977.

He served in the U.S. Army Air Corps during World War II and was a Reserve Officer from 1950 to 1953. Before joining NASA, he worked for 12 years with North American Aviation and Chance Vought Aircraft.

Nicks is past President of the Tidewater Soaring Society, a Fellow of the American Astronautical Society, an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA), and a member of the Experimental Aircraft Association and the Soaring Society of America.

NASA awards received by Nicks include the Distinguished Service Medal, the agency's highest award; the Exceptional Service Medal and the Outstanding Leadership Medal.

Commenting on his decision to continue his career at a university, Nicks said, "I have always regarded NASA activities as a government-industry-university team effort, and I hope to continue as a member of that successful team in a different role."

Dr. Duberg, Associate Director since 1968, has been closely concerned with Langley's relationships with the nation's academic community, and was instrumental in the development of NASA's Space Radiation Effects Laboratory in Newport News. He is Director of the Joint Institute for the Advancement of Flight Sciences, a cooperative program between Langley and George Washington University's School of Engineering and Applied Sciences. Founded in 1971, the institute is dedicated to increasing the nation's research and engineering abilities in relevant technical fields.

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Duberg graduated with highest honors from Manhattan College in 1938 with a bachelor of science degree in civil engineering. He received a fellowship from Virginia Polytechnic Institute and State University in 1939 and held a graduate research assistantship at the University of Illinois from 1940 to 1943.

He joined the Langley staff in 1943. He returned to the University of Illinois in 1946, where he earned a doctor of philosophy degree in engineering in 1948. He returned to Langley that year as Chief of the Structures Research Division.

From 1956 to 1957 he was Director of Aeromechanics at Aeronutronics Systems Inc., Glendale, Calif.; from 1957 to 1959 he was a professor at the University of Illinois.

Duberg returned to the Langley staff in 1959 and was appointed an Assistant Director in May 1964, with responsibility for the research activities of the Dynamic Loads Division and the Structures Research Division.

Duberg is a member and director of many Peninsula civic and professional organizations. He is a member of the American Institute of Aeronautics and Astronautics, the Society of Industrial and Applied Mathematics, the New York Academy of Science, the Virginia Academy of Science, the American Association for Advancement of Science, a director of the American Society for Engineering Education, member of the Engineers' Club of the Virginia Peninsula, the Virginia Society of Professional Engineers, the Advisory Board of the University of Tennessee Space Institute and the Engineering Advisory Board of the University of Virginia.

Duberg attended the Federal Executive Institute in 1971. He received the Outstanding Alumni Award from Manhattan College in 1972 and the AIAA DeFlorez

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Training Award in 1976. He was presented the Peninsula Engineer of the Year Award, the George Washington University Distinguished Engineering Award and Langley's STAR Computer Implementation Team Group Achievement Award in 1976. In 1977 he was presented the NASA Medal for Outstanding Leadership.

Heldenfels, Director for Structures since March 1975, manages research and development activities of the Acoustics and Noise Reduction Division, Structures and Dynamics Division and Materials Division. The Directorate is responsible for research work in acoustics, noise reduction, materials, structures, loads, dynamics, aeroelasticity and special programs in computer-aided design and composite structures for aircraft and space vehicles.

Heldenfels received a bachelor of science degree in aeronautical engineering from the Massachusetts Institute of Technology in 1942 and served in the U.S. Army Air Force during World War II.

Heldenfels began his Langley career in November 1947. He was one of the first investigators of aircraft structural problems produced by aerodynamic heating and has been particularly active in the development of structures test facilities that simulate or duplicate the environment of high-speed flight. He was appointed Chief of the Structures Research Division in 1956 and became Assistant Director for Structures in 1970.

Heldenfels is an Associate Fellow of the AIAA and a member of the Engineers' Club of the Virginia Peninsula. He received NASA's Exceptional Service Medal in 1969 for his work on high-temperature facilities and advanced aerospace structures.

Stitt, Director for Electronics since March 1975, manages research and development activities of the Analysis and Computation Division, Instrument Research Division, Flight Dynamics and Control Division, Flight Electronics Division and the Terminal Configured Vehicle (TCV) Program Office. The Directorate is responsible

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for all electronics research at the Center, for operation of computer systems, electronics support to other organizations and management of the TCV Program to improve aircraft operations in terminal areas.

Stitt served in the U.S. Army Signal Corps during World War II. He began his Langley career in June 1947 after receiving a bachelor of science degree in electrical engineering from the Georgia Institute of Technology.

He was selected as Assistant Chief of the Instrument Research Division in 1963. From 1965 to 1970 he was Assistant Chief of the Flight Instrumentation Division (now the Flight Electronics Division), and he was named Chief of that organization in 1970.

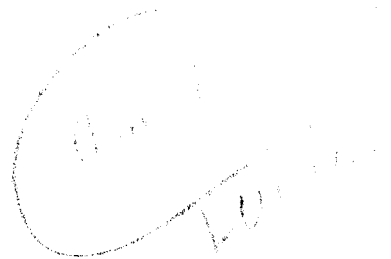
Stitt was presented a NASA Special Achievement Award in 1971 for his work in instrumentation, communications and electronics. He received the NASA Exceptional Service Medal in 1972 and the NASA Medal for Outstanding Leadership in 1977.

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Release No. 80-20

KILGORE NAMED NASA'S ASSOCIATE ADMINISTRATOR FOR MANAGEMENT OPERATIONS

Hampton, Va.--Edwin C. Kilgore, Director for Management Operations at NASA's Langley Research Center since 1975, has been named Associate Administrator for Management Operations at NASA Headquarters in Washington, D. C., effective immediately.

Kilgore will be responsible for coordinating agency-wide institutional management and for the overall management of institutional resources for NASA programs at 11 field centers. He has been Acting Associate Administrator for Management Operations at NASA Headquarters since August 1979.

Kilgore began his NASA career in 1944 as a development design engineer in Langley's Engineering Division. He was named Technical Assistant of the Machine Design Branch in 1954 and Assistant Chief of the Engineering Service Division in 1960.

Appointed Chief of the Flight Vehicles and Systems Division in 1962, he directed the engineering, design and development of multi-stage rocket vehicles and spacecraft. From January to June 1968, he was Assistant Chief of Engineering and Technical Services, implementing proposed research missions and programs. He became Deputy Chief of Engineering and Technical Services in June 1968, sharing responsibility for setting policies to operate and manage centralized engineering support to all Langley research organizations.

Kilgore had an important role at Langley in the conceptual planning, design and resolution of problems for several space projects, including Lunar Orbiter, the S-55 Micrometeoroid Satellite, the Scout launch vehicle, and early satellite projects Echos I and II.

From 1970 to 1975 Kilgore held several management positions at NASA Headquarters, including Deputy Associate Administrator (Management) in the Office of Aeronautics and Space Technology and Acting Associate Administrator for that office. In 1974 he was appointed Deputy Associate Administrator for Center Operations, a management office responsible for all NASA field center operations.

A native of Coeburn, Va., Kilgore received a bachelor of science degree in mechanical engineering from Virginia Polytechnic Institute and State University in 1944.

He received the Roger W. Jones Award for **Executive Leadership** from American University in 1978, NASA's Medal for **Outstanding Leadership**, an Honorary Group Achievement Award of the Rocket Motor Review Board for helping achieve a record of 97 consecutive successes for the Scout rocket and a NASA-Lunar Orbiter Project Group Achievement Award for Outstanding Performance.

Kilgore and his wife live in Hampton. They have two married daughters.

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Release No. 80-25

MCCORMICK RECEIVES ARTHUR FLEMMING AWARD

Hampton, Va.--Dr. M. Patrick McCormick, Head of the Aerosol Measurements Research Branch, Instrument Research Division, at NASA's Langley Research Center, Hampton, Va., has been presented the Arthur S. Flemming Award by The Downtown Jaycees of Washington, D. C.

Honored as one of 10 outstanding young Federal government employees of 1979, McCormick received the award for his outstanding achievement in the development of instrumentation and measurement techniques for the analysis of particulate aerosols in the atmosphere, for leading the scientific community in making correlative measurements of atmospheric aerosols in the northern and southern hemispheres with ground-based and airborne lidar, and for his alertness in making the earliest measurements of aerosols injected into the stratosphere by eruption of the Volcanos Fuego in 1974 and La Soufriere in 1979.

This is the 32nd year that The Downtown Jaycees have presented the Flemming Award to recognize those who have performed outstanding and meritorious work for the Federal Government. The award was presented to McCormick at the Jaycees' awards luncheon in Washington, D.C., April 11.

A native of Canonsburg, Pa., McCormick graduated from Canonsburg High School in 1958. He received a bachelor of arts degree in physics in 1962, graduating with honors from Washington and Jefferson College in Washington, Pa.

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He earned a master of arts degree in physics in 1964 and a doctorate in physics in 1967 from the College of William and Mary in Williamsburg, Va.

McCormick began his NASA career in August 1967 as an aerospace technologist in Langley's Instrument Research Division. In January 1970 he was named senior systems engineer for Fairchild Hiller in Germantown, Md. McCormick returned to Langley in May 1970 as Head, Photo-Electronic Instrument Section in the Instrument Research Division. In June 1975 he was appointed to his present position, where he develops techniques and performs studies and measurements on atmospheric aerosols and gases. He is the experiment scientist and science team leader of two satellite experiments which are orbiting earth and providing new data on stratospheric aerosols and ozone.

The author or co-author of over 50 technical publications, McCormick has received seven NASA Group Achievement Awards. He is a member of the Optical Society of America, American Geophysical Union, Joint Organizing Committee of GARP on Aerosols and Climate and Committee on Laser Atmospheric Studies of the American Meteorological Society. He has been the co-chairman and a member of the organizing committee for many scientific conferences and workshops on atmospheric research.

McCormick is President of Washington and Jefferson College's General Alumni Association and President of the National Wrestling Officials Association which promotes officiating consistency throughout the nation. He represents college officials at the Annual Wrestling Sports Committee's Rules Interpretation Meeting and has authored many articles on officiating. He has refereed 12 NCAA Division 1 tournaments (four years as chief official) and numerous college and high school championship tournaments during his 16 years of officiating.

McCormick and his wife, the former Judy Moyer, live in Hampton, Va., with their two children, Lynn and Michael.

-end-

April 15, 1980

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RELEASE NO. 80-26

LIGHTNING TECHNOLOGY SYMPOSIUM TO BE HELD AT LANGLEY

Hampton, Va. --Two hundred representatives from the United States and a number of foreign countries will participate in an International Symposium on Lightning Technology April 22 through April 24 at NASA's Langley Research Center. The symposium is sponsored by the Federal Aviation Administration, the Florida Institute of Technology and NASA.

During the three-day symposium, 34 papers will be presented on several facets of lightning technology, including phenomenology, instrumentation and measurement, detection and tracking, protection of ground systems, interaction and simulation, and testing. Open forums will be held on the protection of ground systems and simulated lightning testing.

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April 16, 1980

The attendees will be welcomed to the symposium by James E. Stitt, Langley's Director for Electronics, at 9 a.m. in the Langley Activities Center, Building 1222.

Dr. Karl Berger, who established the Lightning Research Station at Mount San Salvatore, Switzerland, will give the keynote address.

For 30 years, Berger conducted lightning experiments at the Lightning Research Station which provided a large amount of scientific data on lightning characteristics. He devoted his technical career to research on high-voltage and lightning transients. In 1928 he developed early cathode ray tube oscillographs in preparation for high-voltage and lightning research.

Berger has published numerous articles on lightning physics. For eight years, he was chairman of the Lightning and Sferics Subcommittee of the International Commission on Atmospheric Electricity, a commission within the International Council of Scientific Unions.

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For Release:
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Release No. 80-28

LANGLEY ENVIRONMENTAL OFFICE MEETS GOAL, CLOSES SHOP

Hampton, Va.--The office at Langley Research Center that literally got NASA's environmental program off the ground during the 1970's has successfully completed its mission and closed its doors.

The Environmental Quality Projects Office (EQPO) was established at Langley in 1972 to lead NASA's efforts to plan and implement an environmental quality program. With its assignment completed, EQPO has turned future work over to the NASA Headquarters Office of Space and Terrestrial Applications in Washington, D.C.

In the early 1970's, in response to a growing national concern for protecting the quality of the environment, NASA decided it could help by monitoring and interpreting environmental data from satellite-borne experiments.

Langley was chosen as the NASA "focal center" for the work because of its leadership in remote sensing research and in advanced instrumentation developments. At the same time, other NASA centers were given similar responsibilities: Johnson Space Center at Houston, earth resources studies; Goddard Space Flight Center in Maryland, meteorological research; and Ames Research Center in California, aircraft flight programs.

EQPO, while physically located at Langley, reported directly to NASA Headquarters, coordinating the research of several NASA centers and making program and budget recommendations to Headquarters.

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The Langley share of environmental quality research has grown from a \$50,000 program employing about 25 people to a \$20 million program that--at its height--had more than 200 people, not counting the Environmental Quality Projects Office itself. EQPO never numbered more than 17 people at Langley, but they were in the middle of many projects.

John Mugler, last head of EQPO, is quick to point out that the contribution of his relatively small staff was primarily administrative: to formulate, package and promote the kinds of environmental research projects they thought NASA could do best.

The most visible evidence of the NASA work has been the orbiting of environmental experiments aboard a continuing series of satellites.

While public attention was focused on the diplomatic significance of the Apollo-Soyuz mission in 1975, a Langley experiment aboard the Apollo spacecraft was quietly taking environmental measurements in the stratosphere. SAM (Stratospheric Aerosol Measurement) was one of many experiments that flew on the mission, but it marked the beginning of the NASA space flight program for environmental research as formulated by EQPO.

The first mission dedicated to monitoring environmental quality was the Nimbus-G satellite, launched in September 1978. Three Nimbus experiments investigated air pollution: one was contributed by the United Kingdom, and two are products of EQPO-sponsored work at Langley. One Langley experiment, LIMS (Limb Infrared Monitoring of the Stratosphere) is providing infrared measurements of ozone, water vapor, nitrogen dioxide and nitric acid; the second Langley experiment, SAM II, is taking a closer look at aerosols in the atmosphere.

SAGE (Stratospheric Aerosol and Gas Experiment) added to the alphabet soup of satellite-launched experiments in early 1979. Its sole mission is to determine the distribution of stratospheric aerosols and ozone on a global scale.

Satellite measurements of the Earth allow a broad view of pollution and weather systems that transport it. Pollution that begins in one region may often affect either the environmental quality or the weather of another region but, without the long-distance view of an orbiting spacecraft, it may not be obvious.

A favorite example cited by Bob Rinehart, EQPO technical assistant for eight years, is a satellite picture of Gary, Ind., and the eastern shore of Lake Michigan, taken one recent winter. Without that picture, it would have been very difficult to convince a steelworker in Gary that pollution from his plant and others contributed to a snowstorm on the shore of Lake Michigan, 75 to 100 miles northeast of Gary.

The photo was as clear as a roadmap. Particulates from the steel mills had combined with water vapor and could be seen as cloud-like plumes extending from Gary straight into a huge cloud over the eastern half of the lake. Exactly parallel to the cloud, for many miles inland, was a white blanket of freshly fallen snow.

In spite of impressive technological achievements by NASA in designing remote environmental sensors and putting them into orbit, Mugler puts those achievements into perspective by explaining that "the satellite flight programs are a means to an end, not the end product itself."

The success of the multi-center research program that has evolved is measured in the vast amount of useful information that NASA experiments have made available to the scientific community and to agencies like the EPA, the National Oceanic and Atmospheric Administration, the United Nations and others.

The growth of NASA's program has also been good for the agency and for Langley, according to Mugler. "Because of our focal center responsibilities," he says, "Langley has been able to build an aggressive, and still enlarging, atmospheric and water quality program.

"Our water quality program is still maturing, heading toward dedicated experiments on future spacecraft. With a budget of about \$1 million a year, it is a major research and technology effort using theoretical models, laboratory

studies, data from aircraft and limited supporting data from satellite programs like Landsat, Seasat and Numbus-G. NASA had a head start in studying the atmosphere--and water quality is harder to measure--so the water program is where the atmospheric program was a few years ago."

Both air and water programs will get a boost during the 1980s from experiments to be flown in Earth orbit with the Space Shuttle. In fact, a Langley experiment fostered by EQPO is scheduled as one of the first to fly. The second Shuttle flight--the first with science experiments aboard--will carry MAPs (Measurement of Air Pollution from Satellites). It will take a look at carbon monoxide in the lower atmosphere.

The Shuttle will also carry HALOE. This experiment is being designed at Langley to survey and map the distribution of several environmentally significant gases in the atmosphere called halogens.

Three more Langley products which will contribute to environmental studies are proposed for Shuttle flights: Shuttle LIDAR (Light Detection and Ranging) is planned for an extensive series of flights; NOSS, the National Oceanic Satellite System, is scheduled to carry, among other things, an experiment with a water color sensor; and UARS (Upper Atmospheric Research Satellite) would study a wide range of chemistry and other factors unique to the upper atmosphere.

Continuing research and a growing reservoir of satellite information will give testimony to the effectiveness of the Environmental Quality Projects Office long after its disestablishment.

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April 18, 1980

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Release No. 80-29

NASA AWARDS SUPERSONIC STUDY CONTRACTS

Hampton, Va.--Three major American aircraft manufacturers have each been awarded contracts by NASA for continued technology studies on advanced transport concepts capable of supersonic cruise flight.

Contracts awarded during the first week in April to the Boeing Company, the Lockheed California Company, and the McDonnell Douglas Corporation, each for approximately \$1.15 million, are intended to further develop the technology base for this class of transport.

The contractors will work in the same discipline technology areas, but each will also do work which applies to its own baseline concept. All three manufacturers have basic design concepts which, like those of NASA, have been evolving for years with each new development in supersonic cruise research.

Boeing's baseline concept is a blended body 270-passenger delta-winged configuration with a cruise speed of Mach 2.4. The Douglas baseline is an arrow-winged configuration capable of carrying from 225 to 300 passengers at cruise speeds of Mach 2.2. Lockheed is contemplating a Mach 2.5 arrow-winged configuration which could carry 290 passengers.

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Various other design concepts have come from within NASA, but all share a common technological heritage. Each design requires continued research into improved aerodynamics, light weight titanium and composite structures, and variable cycle engines for efficient subsonic and supersonic operation. NASA has also asked the three contractors to draw on past studies and update them in these studies, looking especially for economic considerations, reduced fuel consumption, and reduced noise.

The contracts each cover a period of about 14½ months and work will be done at the contractors' facilities. The contracts will be managed by NASA's Langley Research Center.

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April 18, 1980

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Apr 21

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LANGLEY TO HOST FEDERAL LABORATORY CONSORTIUM

Hampton, Va.--The Spring 1980 conference of the Federal Laboratory Consortium for technology transfer will take place at NASA's Langley Research Center May 6 through 8. The conference will be held in the Activities Center, Building 1222, beginning at 8 a.m. each day.

The Consortium, comprised of over 185 federal research and development installations, will be attended by approximately 100 representatives from NASA, Department of Defense, Department of Energy and other federal agencies.

The FLC, a key part of the National Science Foundation-sponsored Federal Laboratory Program, aims to develop and implement ways to help apply agency resources to the solution of domestic problems at the state and local government levels.

Dr. Joseph E. Clark, Executive Office of the President, Office of Science and Technology Policy, will give the keynote address. He will speak on intergovernmental science, engineering and technology policy and plans.

Langley is a participating laboratory in the Consortium through the Technology Utilization Office. Program Manager of the FLC is John McFall of Langley's Marine and Applications Technology Division, who is on a two-year assignment to the National Science Foundation.

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April 29, 1980

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Apr 30

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Release No. 80-34

RESEARCH SHEDS LIGHT ON AMMONIA SOURCE

Hampton, Va.--A research program at NASA's Langley Research Center may have shed new light on efforts to understand the concentrations, sources and chemistry of ammonia in the atmosphere. The research, begun in February 1979, uses advanced electronics instrumentation and computer modeling of atmospheric chemistry.

As part of this study, Langley researchers believe they have detected a 10-fold increase of ammonia in the Tidewater area during March and early April 1979. The enhanced levels of atmospheric ammonia are thought to have been caused by the conversion of agricultural ammonium nitrate fertilizers to ammonia by the action of microorganisms in the soil.

Ammonia, while only a trace atmospheric gas, is an important element in the delicate chemical and radiation balance of the atmosphere.

The presence of ammonia in the atmosphere, chiefly due to microbiological reactions in the soil, was previously thought to be greatest in late summer when soil temperatures are at their highest. According to Langley research scientist Dr. Joel S. Levine, however, the production of ammonia from agricultural fertilization, which occurs in late February and early March, had not been taken into account. Ammonia produced in this way is released into the atmosphere as an invisible gas.

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April 30, 1980

Although present in low concentrations, Levine points out that atmospheric ammonia may play several important roles:

- Ammonia contributes to the chemical production of solid atmospheric particles called aerosols. They can affect the transmission of radiation within the Earth-atmosphere system through the distribution of incoming solar radiation from the Earth's surface, both important determinants of climate.

- Scientists have long recognized that ammonia plays a part in the so-called greenhouse effect which warms the surface of the Earth. Some warming occurs because gases such as carbon dioxide, water vapor and ammonia can absorb and then re-emit infrared radiation, or heat waves, given off from the Earth's surface. This absorption prevents the heat from escaping into outer space.

- Ammonia may control the formation of sulfuric acid, the dominant acid in acid rain, which adversely affects the environment. Fish populations of some regions have been almost eliminated or severely diminished because of increased acidity in the lakes. President Carter has asked Congress for a 10-year, \$100 million federal acid rain assessment program.

- There is speculation that ammonia may lead to the formation of nitrogen oxides (NO_x), gases containing nitrogen and oxygen atoms. NO_x leads to the destruction of the ozone layer which protects the Earth from harmful solar ultraviolet radiation. So little is known about ammonia concentrations in the atmosphere, however, that no definitive statements can be made as to the importance of NO_x production from ammonia.

- Man may also be increasing the amount of ammonia in the atmosphere by the combustion of coal. With the switch to greater dependence on coal by the United States and other countries, it will be important to better understand ammonia, its chemistry and its effect on the environment.

Accurately measuring the vertical distribution of the extremely small ammonia concentrations throughout the atmosphere has not been possible until recently. The highest readings from the Langley measurements showed about 10 ammonia molecules in every billion molecules of air. Measurements are now possible because of instrument and technological improvements by a group of researchers, including Frank Allario, James Hoell, Robert Seals and Burnie Williams at Langley, and others at Airborne Instrument Laboratories on New York's Long Island.

The ammonia measurement program, under the direction of Hoell, uses an instrument called an Infrared Heterodyne Radiometer (IHR). The IHR, in essence, looks at the Sun through the atmosphere and analyzes parts of the solar spectrum to measure the concentration of ammonia and other trace gases. Information is then analyzed by a detailed computer model of atmospheric chemistry, which reproduces the measurements with more than 100 different simultaneous chemical reactions.

Levine expects the effects of ammonia on atmospheric chemistry and climate to be examined more closely after he and his colleagues present evidence based on their work to the scientific community. Two papers, with Levine and Hoell as senior authors, were recently accepted for publication in Geophysical Research Letters and will be presented at the May 22-27 meeting of the American Geophysical Union in Toronto.

Tommy Augustsson, who is working on a doctoral dissertation at Old Dominion University, does the computer programming and analysis of the ammonia measurements, and is a co-author of the papers. Levine and Hoell work in Langley's Atmospheric Environmental Sciences Division and Instrument Research Division, respectively.

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Release No. 80-36

PHILLIPS AWARDED FLOYD THOMPSON FELLOWSHIP

Hampton, Va.--Dr. Donald H. Phillips, a physicist in the Laser and Spectroscopy Branch, Instrument Research Division, at NASA's Langley Research Center, is the 1980-81 recipient of the Floyd L. Thompson Fellowship.

The Thompson Fellowship Program was established in 1977 to encourage the development of research potential among the Langley staff. The Fellowship allows researchers, who have demonstrated continued growth in research, to spend up to 12 months at an educational or research institution. It is named in memory of Dr. Floyd L. Thompson, Langley Director from 1960 to 1968. Thompson joined the Langley staff in 1926, retired in 1968 and was a consultant to the NASA Administrator until January 1973.

Phillips will spend one academic year at the Applied Physics Division of Harvard University conducting research to improve the theoretical methods used to investigate complex physical systems. Some of the systems of interest to NASA are the chemical reactions that occur on the surface of atmospheric particles (aerosols), corrosion and fatigue sites in materials for aircraft and spacecraft and impurities in semiconductors for aircraft display panels.

"Development of an improved theoretical method will allow a better understanding of the physical systems," Phillips said. "The method would be applicable to a wide range of problems, in addition to those of interest to NASA, including the development of better catalysts for coal conversion,

hydrogen fuel production and photovoltaic devices."

Phillips began his NASA career in June 1963 as an aerospace technologist in Langley's Applied Materials and Physics Division. From 1970 to 1978 he was assigned to the Environmental and Space Sciences Division, now called the Atmospheric Environmental Sciences Division. In 1978 Phillips began his present work, investigating the reactions of atmospheric gases which are important in pollution chemistry. He has specialized in radiation damage, electronic properties of materials and theoretical chemistry.

A native of Tennessee, Phillips graduated from Alcoa High School in Alcoa in 1958. He earned a bachelor of science degree in physics from Tennessee Technological University in 1963. He received a master of science degree in 1968 and a doctor of philosophy degree in 1971 in physics from Virginia Polytechnic Institute and State University.

The author or co-author of over 30 technical papers, Phillips is a member of the American Physical Society, American Chemical Society and the American Association for the Advancement of Science. He has received two Outstanding Performance Awards.

Phillips and his wife, Jan, live in Hampton with their daughter, Jenifer. He has two daughters from a previous marriage. Donna attends Mary Baldwin College and Deborah is a senior in high school.

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May 2, 1980

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Release No. 80-38

LANGLEY SPONSORS AUTOMATED DECISION-MAKING AND PROBLEM SOLVING CONFERENCE

Hampton, Va.--Considerable interest has developed recently in space-mission-related machine intelligence and robotics technology. The particular areas of interest to NASA are automated decision-making and problem solving.

To assist NASA technology planners in defining future research programs, the Langley Research Center will host a "Conference on Automated Decision-Making and Problem Solving" May 19 and 20 in the Activities Center, Building 1222.

The purpose of the workshop is to explore related topics in artificial intelligence, operations research and improved control theory, and to assess existing techniques, determine development trends and identify their potential for applications in NASA programs.

Alfred J. Meintel, Jr., of Langley's Flight Dynamics and Control Division, is Chairman of the conference and Walter W. Hankins, FDCD, is Coordinating Chairman.

According to Hankins, attendees at the two-day workshop will include representatives from universities, private industry, NASA and other government agencies.

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May 14, 1980

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May 19

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RELEASE NO. 80-40

MACE, GOETZ NAMED LANGLEY RESEARCH CENTER DIRECTORS

Hampton, Va. --New directors of two major research organizations at NASA's Langley Research Center have been selected by Langley Director Donald P. Hearth.

Pending formal approval, William D. Mace will become Director for Electronics and Robert C. Goetz will be Director for Structures. Mace is now Chief of the Flight Electronics Division; Goetz is Special Assistant to the Chief of the Structures and Dynamics Division. Both are long-time members of Langley's research staff.

In making the announcements, Dr. Hearth stressed the excellent qualities of many of the candidates for the two positions. "My problem was in choosing from among several A-plus people," Hearth said.

Mace will manage all electronics research and development activities at the Center, including operation of computer systems, electronic instrumentation for aircraft and spacecraft, flight dynamics and control, flight electronics,

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electronics support to other organizations, aviation electronics research planning, and the Terminal Configured Vehicle Program to improve aircraft operations in terminal areas. He will direct the work of almost 600 people.

Goetz will head the organization responsible for research work in materials, structural mechanics, aeroelasticity, and acoustics and noise reduction. He will manage the work of approximately 260 people.

Mace began his Langley career in 1948 as an aeronautical research engineer in the Instrument Research Division. He was appointed Head of the Sensor Development Section in 1962 and Head of the Measurement Research Branch in 1963. He became Technical Assistant to the Assistant Director in 1966 and Assistant Chief of the Flight Instrumentation Division (now Flight Electronics Division) in 1970. He was appointed Chief of that organization in 1975.

A native of Waverly, Virginia, Mace received a bachelor of science degree in physics from the College of William and Mary in 1948. He served in the U. S. Air Force from 1943 to 1945.

He has received three Outstanding Performance Awards, a Special Achievement Award and a NASA Exceptional Service Medal.

Mace and his wife, Betty, live in Hampton. They have two children.

Goetz joined the Langley staff in July 1959 to conduct research in hypersonic aeroelasticity in the Dynamic Loads Division. He was an officer in the U. S. Air Force, assigned to Langley, from October 1959 to November 1962.

He served on the Technical Evaluation Team of the NASA Space Shuttle Source Evaluation Board in 1972 and as a structures specialist in the Aeronautical Systems Office from 1972 to 1973.

Goetz was appointed Head of the Flight Loads Section of the Structures and Dynamics Division in 1973 and Head of the Dynamic Loads Branch in 1974.

Under the NASA Executive Development Program, Goetz was assigned to the Office of Aeronautics and Space Technology at NASA Headquarters in Washington, D. C., where he was manager of structures and dynamics research from 1979 to 1980.

Upon his return to Langley, he became Special Assistant to the Chief of the Structures and Dynamics Division, responsible for planning and coordinating new thrusts in structures and dynamics research. He also serves as a special consultant for the Space Shuttle Program.

Goetz was born in Miami, Florida. He received a bachelor of science degree in aeronautical engineering from Georgia Institute of Technology in 1959 and a master of science degree in engineering mechanics from Virginia Polytechnic Institute and State University in 1967.

The author of over 30 publications and presentations on hypersonic aeroelasticity, Space Shuttle dynamics and aeroelasticity, dynamic loads and flutter, Goetz has received several awards, among them a Sigma Xi Award for his master's thesis. He is a member of the American Institute of

Aeronautics and Astronautics, where he serves on the Structural Dynamics Committee.

Goetz and his wife, Josemarie, live in Williamsburg with their two children.

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May 19, 1980

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Release No. 80-41

NASA PICKS BUSINESS DATA SUPPORT CONTRACTOR

HAMPTON, Va.--Planning Research Corporation, of McLean, Va., has been selected for negotiation of a contract to provide business data processing support services to NASA's Langley Research Center.

The new cost-plus-award-fee contract to be negotiated will cover a potential period of five years, beginning July 1, 1980. The value of the work will be approximately \$6.9 million, which includes a significant sub-contract with a minority-owned business.

Services to be provided in the contract will include analysis and programing related to the design, development, modification, maintenance and implementation of applications systems software; analysis and programing related to the installation and use of operating and related software systems; operation of the Langley business processing computer system and its related peripheral equipment; and support to this computer system.

The contract work, to be done at the Langley center, will involve approximately 45 contractor employees.

Unsuccessful bidder on the contract was the Calculon Corporation, Arlington, Va.

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June 12

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RELEASE NO. 80-45

NASA LANGLEY EMPLOYEES AMONG DELEGATION TO VISIT CHINA

Hampton, Va. --Two NASA Langley Research Center employees will be among a 10-member delegation of U. S. aeronautical research and development officials who will visit China this month.

Roy V. Harris, Jr., Chief of the High-Speed Aerodynamics Division, and James L. Copeland, Head of the Simulation and Applications Section, Analysis and Computation Division, will represent Langley when the delegation meets with Chinese officials in Beijing (Peking) and tours several Chinese aeronautical research facilities June 15 through 28.

The U. S. delegation, composed largely of NASA officials, is headed by Dr. Alan Lovelace, NASA Deputy Administrator. The visit to China is the first step in an exchange between NASA and the Chinese Aeronautical Establishment, which is to send a counterpart delegation to the United States in the fall. The purpose of the exchange is to become familiar with each other's

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June 12, 1980

civil aeronautics research and development activities in preparation for exploring prospects for NASA/Chinese cooperation in this field.

"This is a go-and-see trip," Copeland explained. "We will look for areas of mutual benefit for possible future technical interchange."

Selected as a delegate because of his expertise in flight simulation, Copeland will brief the Chinese on "Ground-based Simulation Hardware and Software" and "Langley's Terminal Configured Vehicle Program." Copeland expressed delight in his selection: "I feel it is one of the highlights of my career to represent NASA in the area of flight simulation."

The delegates were selected from various aeronautical disciplines, such as aerodynamics, propulsion, structures, simulation and wind tunnel testing. "The distribution of these disciplines was spread among the NASA centers," Harris said. "I was selected to represent NASA in the areas of aerodynamics and wind tunnel testing." Harris will give a lecture on "Wind Tunnel Measurements and Correction Techniques" during the two-week stay in China.

Harris feels "it is a terrific opportunity to go to China to tour their aeronautical facilities. The Chinese culture is different from any that I have ever experienced and I am looking forward to the visit very much."

Harris, who is nationally recognized as an authority in the field of supersonic aerodynamics and has made major contributions in the development of analytical techniques for aircraft design and evaluation, joined the Langley staff in 1958 as an aerospace research engineer. From 1959 to

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1962 he was an Air Force officer assigned to NASA. He was appointed Head of the Advanced Configuration Branch in 1963. He assumed his present position in 1974, where he is responsible for aerodynamic research involving high-speed aircraft and missiles.

A native of Georgia, Harris earned a bachelor of science degree in aeronautical engineering from Georgia Institute of Technology in 1958. The author of over 30 technical publications, he holds a patent on a supersonic aircraft.

Harris is a member of the Engineers' Club of the Virginia Peninsula and is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He was recently elected to a three-year term as a Director of the Institute. In 1968 he received the AIAA Lawrence Sperry Award and the NASA Exceptional Service Award for his research which led to "a significant technological foundation for the development of supersonic aircraft."

Copeland began his Langley career in June 1958 as an aerospace engineer. He was named Head of the Simulator Development Section in 1972 and assumed his present position in 1977, where he is in charge of nine flight simulators, covering all classes of vehicles for general aviation, military fighter planes, transports and the Space Shuttle.

A native of Tennessee, he attended David Lipscombe College and received a bachelor of science degree in mathematics from Tennessee Polytechnic University in 1958. He served in the U.S. Air Force from 1951 to 1955.

The author of three technical publications, Copeland has received several Special Achievement and Group Achievement awards. He is a member of the American Institute of Aeronautics and Astronautics, where he is Chairman of the Working Group for Simulation Facilities.

Cooperation between NASA and Chinese agencies is conducted under the overall protection of the U. S. -China Agreement on Cooperation in Science and Technology, signed by President Carter and Chinese Vice Premier Deng Xiaoping on Jan. 31, 1979.

In addition to Harris, Copeland and Lovelace, members of the U. S. delegation are: Dr. John F. McCarthy, Director of the NASA Lewis Research Center in Cleveland; William S. Aiken, Jr., Chief Engineer, Office of Aeronautics and Space Technology, NASA Headquarters, Washington, D. C.; Dr. William F. Ballhaus, Director of Astronautics, NASA Ames Research Center, Mountain View, Calif.; Richard A. Rudey, Chief of the Aerothermodynamics and Fuels Division, Lewis; Dr. Leonard A. Harris, Manager of Materials and Structures, Research and Technology Division, Office of Aeronautics and Space Technology, NASA Headquarters; Peter G. Smith, International Relations Specialist, International Affairs Division, NASA Headquarters; and U. S. A. F. Col. Norris Krone, Jr., Director of the Air Vehicle Technology Office, Defense Advanced Research Project Agency.

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Release No. 80-50

JOHN STOKES NAMED NASA-LANGLEY MANAGEMENT OPERATIONS DIRECTOR

John F. Stokes has been named Director for Management Operations at NASA's Langley Research Center. He is former Chief of the Projects Management Systems Division in the Projects Directorate.

Stokes' appointment was announced by Langley Director Donald P. Heath, and was effective July 13.

As Director for Management Operations, Stokes will be responsible for all Langley institutional management operations, including personnel, programs and resources, acquisition, financial management, management support, scientific and technical information programs, business computer systems, chief counsel, patent counsel, technology utilization, industry relations, and occupational health services.

He heads one of seven major Langley organizations that advise the Center Director on specific matters of technical and operational management.

Stokes began his NASA career at the Goddard Space Flight Center in Greenbelt, Md., in 1962 as an aerospace technologist in flight systems. He became Goddard's Technology Utilization Officer in 1967 and wrote his master's thesis on "Difficulties in Technology Transfer" in 1968.

He was appointed Head of the Incentive Contracts Office in 1970, responsible

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July 17, 1980

for the administration of approximately 35 award-fee contracts for support services and major flight programs. In early 1974 he became Deputy Project Manager for Resources for the Explorer Satellite Projects and led a major study to verify the cost plan for a new start Explorer project. He served in that same capacity for the International Sun-Earth Explorer Project from early 1975 until he came to Langley in April 1977.

As Projects Management Systems Division Chief, at Langley, he was responsible for managing all project resources, schedules, configuration management and documentation, technical administration, early planning for new projects, budget preparation and execution, and financial analysis. Among the major Projects Directorate programs are Aircraft Energy Efficiency, the Earth Radiation Budget Experiment, Large Space Systems Technology, the Scout launch vehicle and the Long-Duration Exposure Facility.

Born in 1940, Stokes earned a bachelor of science degree in electrical engineering from Catholic University of America in 1962. He earned a master of science degree in engineering administration from George Washington University in 1968.

While at the Goddard Space Flight Center, he received numerous awards for his contributions, including a Certificate of Outstanding Performance in 1973. He is a member of Tau Beta Pi national engineering honor society and the American Institute of Aeronautics and Astronautics.

He replaces Edwin C. Kilgore, who became Associate Administrator for Management Operations at NASA Headquarters.

Stokes and his wife, the former Louise Mae Foley of Washington, D.C., live in Williamsburg with their three children.

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Release No. 80-51

LANGLEY'S FRED BOWEN NAMED MANAGER OF NASA CALIFORNIA OFFICE

Fred W. Bowen, Jr., Acting Director for Management Operations, at NASA's Langley Research Center, has been named Manager of the NASA Resident Office at the Jet Propulsion Laboratory (JPL) in Pasadena, Calif.

He will be the focal point for all NASA institutional management interests at JPL, and report to the Associate Administrator for Management Operations, located in Washington, D.C.

In his new position, Bowen is responsible for negotiating and awarding contracts with the California Institute of Technology, which operates JPL, for the conduct of space, aeronautical and energy research. He is also responsible for reviewing, evaluating and implementing policy directives; participates in the evaluation of JPL functional and institutional matters; and is the senior management contact for JPL and NASA on all institutional matters, including manpower, institutional budgets, work for other agencies, facilities, multi-program support, technical services, key JPL personnel changes, technology utilization, property and equipment, patents, and general contract administration.

As Langley's Acting Director for Management Operations for the past year, he has been responsible for all Center institutional management operations, including personnel, programs and resources, acquisition, financial management, manage-

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July 17, 1980

ment support, scientific and technical information programs, business computer systems, chief counsel, patent counsel, technology utilization, industry relations, and occupational health services.

In early 1979, Bowen was detailed from NASA to serve as Director for Administration for the President's Commission on the Accident at Three Mile Island. He received the Commission's Exceptional Service Award in late 1979 for his work.

From 1975 to 1979, he was Technical Manager for Management Operations at Langley, where he assisted the Director for Management Operations and had directorate-level responsibility for all technical activities. During this time he was a member of the NASA Task Team that developed the agency's Merit Pay and Performance Appraisal process.

At NASA Headquarters from 1972 to 1975, Bowen was Executive Assistant to the Associate Administrator for Aeronautics and Space Technology and then Executive Assistant to the Associate Administrator for Center Operations. In this position he was the principal staff advisor and coordinator for institutional aspects of NASA's 11 field centers.

At Langley from 1964 to 1972, he was Technical Assistant to the Viking Project Manager, a member of the Center's Research Staff Office and, during his first years at Langley, did research with spectroscopic and laser techniques to determine diagnostics of plasma accelerators.

He received a bachelor of science degree in physics from the College of William and Mary in 1964 and completed the course requirements for a graduate degree in physics before moving into technical management. He graduated in the first session of the NASA Management Education Program in 1976.

Bowen received Langley's Special Achievement Award for Sustained Superior Performance in 1980 for his work as Acting Director for Management Operations, and the Certificate of Recognition for Noteworthy Service in Public Administra-

tion as NASA's 1979 nominee for the William F. Jump Memorial Award.

Bowen is a member of NASA's Personnel Management Review Committee, National Contract Management Association, American Institute of Aeronautics and Astronautics and Sigma Pi Sigma national physics honor society.

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NEW MANAGERS AT NASA-LANGLEY

HAMPTON, Va.--Two new management appointments at NASA's Langley Research Center have been announced by Langley Director Donald P. Hearsh.

Dr. Frank Hohl will become Langley Chief Scientist in August, and Sidney F. Pauls will become Staff Assistant to the Director in September, when Pauls returns to Langley from a temporary assignment at NASA Headquarters.

In announcing the appointments, Director Hearsh stated: "The selections of Dr. Hohl and Mr. Pauls mean that the center now has a complete staff through the Program Director level. Dr. Hohl and Mr. Pauls will both hold senior staff positions in the Office of the Director. Dr. Hohl will have two principal duties as Chief Scientist. First, he will serve as the center's research conscience; that is, he will be concerned with the quality and character of Langley's research program and with the center's researchers. Second, he will have overall responsibility for Langley's university program, with the objective of making it the best possible program.

"As my Staff Assistant, Mr. Pauls will be responsible for coordinating center-wide program planning activities and for integrating Langley's program and institutional planning. In addition, he will provide staff support to Mr. Petersen and myself." Richard H. Petersen is Langley's new Deputy Director.

July 25, 1980

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Dr. Frank Hohl is now Head of the Space Technology Branch, Space Systems Division, managing research on advanced space technology, including nuclear pumped lasers, galactic dynamics, plasma physics and space power.

Hohl began his NASA career in 1963 as an aerospace engineer. He served as a group leader; Head, Astrophysics Section; and Head, Space Physics Branch, before assuming his present job in 1976.

Before coming to Langley, he was a member of the technical staff at Bell Telephone Laboratories in 1962-63, and he served in the U.S. Air Force from 1954 to 1958.

Hohl graduated with high honors and a bachelor of science degree in electrical engineering from the University of Florida in 1961. He received a master of science degree in electrical engineering from New York University in 1963. He earned a master of science degree in physics in 1965 and a doctorate in physics in 1967, both from the College of William and Mary.

The author or co-author of almost 100 technical papers and reports, Hohl received NASA's Special Service Award for Exceptional Scientific Achievement in 1969 and the NASA Exceptional Scientific Achievement Medal in 1976. He holds a patent on a Volume Pump Nuclear Laser.

He is a member of the American Institute of Aeronautics and Astronautics, American Astronomical Society, American Association for the Advancement of Sciences and the International Astronomical Union.

Hohl is married to the former Margarete M. Schwellenbach. They and their three children live in Newport News.

Sidney Pauls is now Assistant Chief of the Programs and Resources Division. He has been on special assignment at NASA Headquarters since February, working in the OAST Administration and Program Support Division.

He began his Langley career in 1963, working on various space related pro-

STAFF--3

jects before becoming Head of the Analysis and Planning Group, Programs and Resources Division, in 1970. Between 1972 and 1976, he was Head, Analysis and Programming Branch in what is now the Business Data Systems Division, and Assistant Division Chief.

He began his present job in 1976, responsible for helping provide centralized resources planning capability for institutional funds and research and development funds, preparing and managing operating plans and budgets to insure program execution and fund source integrity. His principal duties are R&D resources management, manpower planning and economic analysis.

Pauls has served as special assistant to the Langley Director and Deputy Director on matters concerning NASA Headquarters OAST and OSTA Program Offices.

He received a bachelor of science degree in economics from the College of William and Mary in 1958 and a master of science degree in management science from George Washington University in 1970. He did post-graduate work in systems analysis during 1973-74 at the Business Administration Center for Advanced Engineering Studies, operated by Harvard College and Massachusetts Institute of Technology.

He was a U.S. Army officer and an industrial consultant in industrial relations/working simplification from 1958 to 1963.

He is the author of several special program planning studies and contractor reports. He received outstanding performance ratings for his work in 1975 and 1978.

Pauls and his wife, Betty, live in Poquoson with their two children.

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NASA News

National Aeronautics and
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Langley Research Center
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July 30

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For Release:

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Release No. 80-53

NASA RESEARCHERS IMPROVE AIRCRAFT EMERGENCY TRANSMITTERS

HAMPTON, Va.--NASA researchers believe they have solved some of the problems related to general aviation aircraft distress signal equipment in which six of every seven systems failed to transmit following a plane crash and approximately 75 percent of all distress signals were false alarms.

The systems, known as emergency locator transmitters, emit a radio beacon, on a specific frequency designated for emergency use, to locate downed aircraft and are supposed to be activated by the impact force of a crash.

Researchers at NASA's Langley Research Center, Hampton, Va., assisting the Federal Aviation Administration through the Radio Technical Commission for Aeronautics, believe they may have an answer to at least one of the activation problems.

The problem lies in the self-contained, battery-powered radio beacon's sensor switch. In some cases the switch has proven too sensitive to normal aircraft vibrations while, in other instances, the switch was not sensitive enough to crash forces.

To activate the radio beacon on impact, the sensor switch must "feel" a force of five times gravity for more than 11 milliseconds (.011 seconds). High-frequency vibrations where the beacon is mounted, however, can make and break the contact more rapidly than the 11 milliseconds needed for activation, allowing

July 30, 1980

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the device to ride through a crash without activating.

Somewhat lower frequencies may cause false alarms, but even lower frequencies are present during a crash. Scientists have built an experimental switch sensitive to low-cycle vibrations out of the range of normal aircraft vibrations and closer to the low-cycle, pulse-like force of a crash.

Huey D. Carden, an aerospace engineer at Langley, designed the modification and tested it. The device was attached to various places inside a section of tail cone from a light airplane, which was in turn, placed inside a protective cylindrical section. The entire 907-kilogram (2,000 pound) assembly was dropped several feet into a .6-meter (2-foot) depth of glass beads, subjecting the sensor switch to forces as high as 16 times gravity.

The same procedure, as well as crash tests using actual aircraft, was initially used to evaluate the problem with the locator beacon.

Carden will report to a special committee of the Radio Technical Commission in August. The Commission, in turn, will recommend to the Federal Aviation Administration and industry an improved second generation of locator beacons for production as early as 1983.

The special committee is examining two other areas: where the beacons were or were not useful, and the performance of the beacons as a total system. The latter group has already determined that antenna location in a downed aircraft strongly influences the range over which the distress signal can be detected.

The committee's expected contributions to better performance of the emergency locator transmitter system will also aid operation of NASA's planned series of search and rescue satellites. Experimental hardware for SARSAT, as the system will be called, will be flight tested on another satellite in 1982. The system is designed to instantly process many distress signals and locate each signal source to within 10 kilometers (6.2 miles). Reducing the number of false locator beacon transmissions will allow the system to operate more efficiently.

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Release No. 80-54

THREE LANGLEY RESEARCH CENTER MANAGERS RETIRE

HAMPTON, Va.--Three Langley Research Center managers, who began their careers with NASA's predecessor agency, the National Advisory Committee for Aeronautics, have retired from government service.

They are Howard B. Edwards, Chief of the Instrument Research Division; Robert O. Schade, Chief of the Flight Mechanics Division; and John P. Reeder, Chief of the Terminal Configured Vehicle Program Office.

Edwards has served as Chief of the Instrument Research Division since 1965. An authority on instrumentation for research, particularly on the use of automatic controls for research, he has planned and directed the research requirements in the fields of electronics, communications and instrumentation.

Born in Landour, India, Edwards came to the United States in 1920 and graduated from high school in Darlington, S.C. He joined the Langley staff in 1930. In 1931 he enrolled at the University of Virginia, where he received a bachelor of science degree in mechanical engineering in 1936, graduating with honors. Following his graduation he was employed by private industry for five years.

Edwards returned to the Langley staff in 1941. He was named Head of the Instrument Application Section in 1943 and Head of the General Research Instru-

August 6, 1980

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mentation Branch in 1947. He became Assistant Chief of the Instrument Research Division in 1959 and Acting Chief in 1964.

A licensed professional engineer in Virginia, Edwards is a member of the Instrument Society of America, the Engineers' Club of the Virginia Peninsula and is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He received a Langley Special Achievement Award in 1972.

He was chairman of Source Evaluation Boards for Wind Tunnel Data Systems and the Stratospheric Aerosol and Gas Experiment (SAGE) Project; the Award-Fee Board for the Instrument Support Service Contract and SAGE; the Design Review Panel for Stratospheric Aerosol Measurement/Apollo-Soyuz; a Space Technology Session conducted by the Institute of Electrical and Electronics Engineers in Richmond; and co-chairman of the technical evaluation committee for the Lunar Orbiter Project. He was a member of the Source Evaluation Board and Design Review Board for the Viking Lander, the Langley Project Coordination Committee, Source Evaluation Board for NASA's Space Radiation Effects Laboratory in Newport News, and Design Review Panel for the Shuttle Infrared Leaside Temperature Sensor, SAGE and SAGE II projects.

Schade, Chief of the Flight Mechanics Division since 1973, has planned, directed, coordinated and developed aircraft flight research programs on aeronautical problems.

Schade began his Langley career as an aeronautical engineer in 1943. He was appointed Head of the Vertical Takeoff and Landing (VTOL) Group in 1952 and Projects Manager, Flight Mechanics and Technology Division, in 1964. He served one year as Head, Vertical Short Takeoff and Landing (V/STOL) Project Office and was then appointed Assistant Head of the VTOL Branch. He was named Assistant Chief of the Research Aircraft and Flight Division in 1970.

He has specialized in aerospace-aerodynamics performance, flight tests,

administrative program management, personnel administration and financial management. He has authored or co-authored approximately 15 technical publications.

Schade was born in Janesville, Wisc. He graduated from Rockford High School in Illinois and received a bachelor of science degree in aeronautical engineering in 1943 from Tri-State College in Angola, Ind. He has taken graduate courses at the University of Virginia.

He is a member of the Engineers' Club of the Virginia Peninsula and the American Helicopter Society. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics and received its citation for effective and energetic leadership. He was presented a Langley Special Achievement Award in 1970.

Reeder, Chief of the Terminal Configured Vehicle Program Office since 1973, has been responsible for the research and integration of airborne systems that use new concepts of navigation, guidance and air traffic control developed by the FAA. These new concepts are intended to improve capacity, safety and noise in high-density terminal airspace.

Reeder began his Langley career in 1938 as a junior aeronautical engineer, working in wind tunnel research. He was then trained by NACA as a research pilot and flew in that capacity for about 25 years. He was active in the early development of handling quality requirements for military and civil airplanes and in the development of improvements to World War II aircraft. He performed early exploration of transonic phenomena and their effects on aircraft characteristics and was a pioneer in the exploration of the effects of sweepback on the low-speed characteristics of aircraft. He is probably best known for his pioneering in rotary wing and V/STOL aircraft aerodynamics, performance and handling characteristics.

In his long association with flight research, he has served as Head of Flight Operations and Assistant Chief of the Flight Mechanics and Technology

Division.

Reeder's research pilot experience has been accumulated in some 224 different single- and multi-engine, civil and military, land and sea aircraft types: 37 jet airplanes, 40 fighters, 58 rotary wing types, including British and French, and eight VTOL airplanes, including British and Canadian.

The author or co-author of over 60 technical reports and papers, Reeder is a Fellow of the Society of Experimental Test Pilots, a Fellow of the American Institute of Aeronautics and Astronautics, an Honorary Fellow of the American Helicopter Society and a member of several other technical and professional societies. He is also a founding member of the Twirly Birds, who soloed helicopters before V-J Day in 1945.

Reeder has received the NASA Exceptional Service Medal, the Octave Chanute Award of the AIAA, the Burroughs Test Pilot Award, presented by the Flight Safety Foundation, and the Wright Brothers Medal of the Society of Automotive Engineers. These awards have resulted from contributions as a research pilot. He led the team which received the NASA Group Achievement Award for the Terminal Configured Vehicle-Microwave Landing System, a national effort in support of the FAA.

A native of the Upper Peninsula of Michigan, Reeder received a bachelor of science degree in aeronautical engineering from the University of Michigan.

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Release No. 80-56

LANGLEY RESEARCHERS STUDY LIGHTNING FROM INSIDE OUT

HAMPTON, Va.--Whoever said lightning doesn't strike twice in the same place wasn't at the National Severe Storms Laboratory in Oklahoma this summer with researchers from NASA's Langley Research Center.

A Langley team of 19 people can testify that lightning not only struck twice, but three times, as a modified F-106B jet fighter was intentionally guided through intense southwest thunderstorms.

The tests, done in conjunction with the National Oceanic and Atmospheric Administration storms lab at Norman, Okla., are designed to study lightning from the inside out. Most of what is known about lightning is a result of studies at ground level; researchers want to know how lightning affects aircraft in flight.

As a result, an ambitious program to study lightning in the midst of thunderstorms has a fighter-type airplane seeking to get hit by lightning.

One morning this summer, after attracting no more than a few Oklahoma raindrops on the windshield in more than two weeks of flights, pilot Jerry Keyser was startled by the team's first lightning strike.

"We (Keyser and fellow research pilot Perry Deal) were inside a cloud, with visibility about 152 meters (500 feet). There was heavy rain and moderate

August 12, 1980

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turbulence. It didn't look that bad. I probably didn't see the whole thing, but I did see a lightning bolt come out of the fog, horizontally, from right to left," said Keyser, a major on assignment to NASA from the Air Force.

"It curved toward me," he continued, "and I instinctively jerked the stick back in an avoidance maneuver. The bolt looked like a headless and tailless snake. It was incredibly fast. Even before I began to react, the 6-to-8-inch diameter 'snake' had struck the noseboom and spiraled down the left side of the airplane and was gone. I had my sunvisor down, just in case, and it was still fairly bright. There was a 'zap, crackle,' but there was no radio noise to warn of its coming."

"I was vastly relieved to hear my good friend Jerry Keyser say 'We just got struck,'" recalls mission director Norman Crabill, who for days had been elbow-to-elbow with storms lab radar controllers directing the craft into and through storm cells in pursuit of lightning. "It meant he was alive, the airplane was intact and that everything we had done to protect them had apparently worked. We had prepared extensively--including actually making tests on the ground with simulated lightning bolts--but this was the first real test."

A landing for an initial strike inspection was followed by an afternoon flight, piloted by Deal, that logged the project's two other direct lightning strikes. The second bolt also struck at the noseboom, but split into streamers down both sides of the aircraft, one attaching to the top of the left wing and the other attaching beneath the right wing. The third, after also striking the noseboom, "ducked under" to strike two probes located below the fuselage.

"We felt we had envisioned the lightning hazards pretty well," says Crabill, "not even a circuit breaker tripped. Although before our Oklahoma mission was over, some moderate turbulence did cause two hydraulic systems to fail."

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Initial optimism about safety faded a little, however, when the project's lightning consultant carefully inspected the aircraft after the team returned to Langley. He discovered that at least part of the second strike had skipped down the top middle of the left wing.

To the uninitiated, each of the several strike points might seem insignificant, no more than a rough, but shiny, spot on the wing that could have been caused by the twist of a knife point. But the top middle of the wing, away from the edges and wing tips, is not usually thought of as a lightning attachment zone, according to F-106B project engineer Bruce Fisher. "The thickness of the wing skin," he explains, "prevented a burn through to the underlying fuel tanks. In addition, a low volatility fuel (JP-5) is used in the aircraft to provide an additional margin of safety."

The sleek fighter plane, capable of supersonic speeds, is on loan from NASA's Dryden Flight Research Center at Edwards, Calif. Even if NASA hadn't already owned an F-106B, however, it still would have been Langley's top choice for such a demanding mission. Besides thick wing skins, its tough construction has been likened to that of a tank. Its weapons bay is larger than average, making room--in the absence of weapons--for experimental equipment to be packed safely inside.

The F-106 is the holder of the world's single-engine speed record, set in the late 1950's. It is still used by the Air Force and can fly to 15,520 meters (50,000 feet). The NASA experiments are designed to work up to that altitude, although most flights will be aimed at thundercells around 4,500 meters (15,000 feet), which is the freezing level and, statistically, the altitude where lightning is most likely to strike.

Thunderstorms within a 160 kilometer (100 mile) range of Langley will be

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candidates for study when the flights resume this month. Meanwhile, repairs and more modifications are being made to the plane and results of the several on-board experiments flown in Oklahoma are being analyzed.

Langley researcher Felix Pitts is excited about preliminary results from his group's "direct lightning strike experiment." Simply taking the measurement was an engineering accomplishment. The group has gone to extremes to isolate the experiment's test equipment using, among other things, fiber optics to transmit data, completely eliminating any electrical connection between the equipment and the custom-made lightning sensors or the plane itself (fiber optics transmit data as light through translucent plastic fibers).

To Pitts' knowledge, the summer strikes marked the first time certain important electrical characteristics of lightning have been measured from an airplane during a lightning strike. The results tentatively indicate that the lightning bolts measured had a relatively more active electric field (compared with their magnetic field) than is generally thought. Significant changes in the electric field's rate of change occurred on a sub-microsecond scale. This and other basic knowledge about lightning is important to help safeguard future aircraft against a lightning strike.

Present-day strides to improve aircraft performance and fuel efficiency require a review of the traditional lightning safeguards built in over the years. Digital avionics (electronic control systems and instruments), for instance, are logical replacements for the bulkier, heavier and less accurate systems in general use today. But because digital avionics work at low electrical levels--about one half a volt--they may be upset by electrical disturbance from lightning, needing to be reset, recalibrated or replaced.

Other lightning-related experiments carried aloft by the F-106B are a light-

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ning "data logger," contributed by the Boeing Commercial Airplane Co., designed to measure the total current of a lightning bolt; a lightning optical signature experiment from the National Severe Storms Lab, designed to record amplitude and frequency of the visible light generated by lightning; a lightning x-ray experiment, contributed by a plasma physicist from the University of Washington, designed to test whether lightning produces x-rays which, in turn, could have an effect on aircraft equipment and passengers; and an atmospheric chemistry experiment, contributed by researchers from Langley's Atmospheric and Environmental Sciences Division, designed to determine whether lightning produces environmentally significant gases.

All of the F-106B work comes under the heading of storm hazards, divided into those that do or do not involve lightning. Those unrelated to lightning include the study of turbulence, wind shear and storm hazards correlation.

The several potential hazards from thunderstorms are still of concern to aircraft operations and design. The number of thunderstorm-related accidents actually went up in a recent five-year survey by the National Transportation Safety Board. From 1964 to 1971, two accidents were recorded with no fatalities, but from 1972 to 1977, the numbers increased to 10 accidents and 313 fatalities.

On those occasions when flying through a thunderstorm is unavoidable, knowing which parts of the storm are likely to produce the least hazardous condition could greatly increase the odds of a safe flight. Storm hazards also include rain, hail and wind.

Through the end of this summer, ground instruments at NASA's Wallops Flight Center on Virginia's Eastern Shore will locate thunderstorms and map the exact location of the F-106B while in thunderstorms. These readings will be compared with readings from on-board instruments and visual observations by the pilot. The objective, in addition to steering the aircraft to and through storms, will be to

develop and test new ground-based and airborne instrumentation for the detection of severe storm hazards.

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NASA News

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Release No. 80-61

NASA AND UNIVERSITIES TEAM UP FOR SIGNIFICANT MOUNT ST. HELENS MISSION

HAMPTON, Va.--NASA and a university research team are joining forces this week to mount what scientists consider one of the most significant research missions ever undertaken to understand how volcanos affect Earth's atmosphere, weather and climate--and their target is Mount St. Helens.

The mission will use a NASA applications satellite, an aircraft crammed with the latest in laser and electronic remote and on-site sensing technologies, and the expertise of scientists from NASA's Langley and Wallops centers; Drexel University; the Universities of Maryland, Arizona and Alaska; Dartmouth College; Michigan Technological University and the Oregon Graduate Center.

During the five-day mission, Sep. 17-21, NASA scientists plan to take transcontinental laser radar soundings, for the first time, of the volcanic veil which still hangs in the upper atmosphere over the United States. They will also obtain measurements of the quantities of certain gases--such as those in the sulfur family--that Mount St. Helens is ejecting into the atmosphere as a function of time.

The science team will also investigate how aerosols--or airborne particulates--are dispersed through the atmosphere. Their studies of the composition

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and morphology--or shape--of the particulates will also tell them something about what is going on inside the volcano.

The mission is a joint effort by the science teams for NASA's Stratospheric Aerosol and Gas Experiment (SAGE) satellite program, and the Research on Atmospheric Volcanic Emissions (RAVE) project, a NASA-funded operation conducted through the various universities. Both activities are elements of NASA's Climatic Research Program, managed by the Office of Space & Terrestrial Applications.

"I'm really excited about the prospects," said Dr. James P. Friend, Principal Investigator for RAVE. Friend, Project Director for Atmospheric Chemistry at Philadelphia's Drexel University, has been working with his colleagues since 1973 to develop a comprehensive field measurement of active volcanos. He was joined early in the effort by Dr. William H. Zoller, RAVE's field coordinator, from the University of Maryland.

"The fact is now established," Friend said, "that explosive volcanos beyond a certain magnitude--like Mount St. Helens--add significantly to the stratospheric aerosol content on a global scale. Aerosols relate to climate by their presence and chemical interaction with gases in the upper atmosphere, both of which affect how much radiative energy from the Sun strikes the Earth.

"But our knowledge of these interactions is sketchy and speculative, and that's one reason for the mission," he said.

Dr. M. Patrick McCormick of Langley, SAGE science team leader and NASA's coordinator for RAVE, expressed similar enthusiasm for the mission. "For example," he said, "the transcontinental lidar flights will represent the first study of the fine-scale homogeneity of the volcanic layer on such a broad basis. No one's ever done it over that distance, and we expect to add valuable data to our knowledge of how aerosols disperse throughout the stratosphere. This will

also complement the global data set that SAGE is producing."

To do this, McCormick's team will use a lidar, which is a light detection and ranging system that essentially combines a laser and an optical telescope. The team will also use the lidar during underflights of the SAGE satellite, which will be passing over the latitudes near Mount St. Helens during this time.

A typical mission will combine a late afternoon series of RAVE measurements in the vicinity of the volcano, followed by underflights of SAGE at dusk.

SAGE was launched in 1979 and has tracked the plumes of three volcanos, including Mount St. Helens. The satellite uses a four-channel solar radiometer to take vertical profiles of ozone and aerosols in the stratosphere. The stratosphere is of particular scientific importance because it is a very stable region, with no rain and little wind to carry away particles. It is here that most of the ozone resides, which protects life on Earth from harmful wavelengths of solar radiation. The inputs of aerosols from volcanos have long lifetimes, and can possibly affect the weather and climate.

Another element of the mission will include studying how sulfuric acid, the main component of acid rain, reacts with other chemicals in the atmosphere. To gain this knowledge, the RAVE science team will combine the capabilities of eight highly advanced and sensitive instrument packages developed during the past few years at the universities and research centers involved.

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Release No. 80-62

CHINESE AERONAUTICS DELEGATION TO VISIT NASA-LANGLEY

HAMPTON, Va.--An 11-member Chinese aeronautics delegation will visit the United States as guests of NASA Sep. 15 through Oct. 5. The group will be headed by Xu Changyu, Vice Minister, the Third Ministry of Machine Building Industry, and Director of the Chinese Aeronautical Establishment.

The visit is the second step in a NASA/Chinese exchange of knowledge about each other's aeronautics research and development activities.

The delegation will visit NASA's Langley Research Center Sep. 18-22. (See attached schedule of events.) The group will also visit NASA Headquarters in Washington, D.C.; Lewis Research Center, Cleveland, Ohio; Dryden Flight Research Center, Edwards, Cal.; and Ames Research Center, Mountain View, Cal.

In addition to the NASA centers, the delegation will visit the Air Force's Arnold Engineering Development Center, Tullahoma, Tenn., and Wright-Patterson Aeronautical Laboratory, Dayton, Ohio, and several U.S. private companies.

A U.S. delegation of aeronautical research and development officials, headed by Dr. Alan Lovelace, NASA Deputy Administrator, visited China in June 1980. Two Langley aeronautics researchers, Roy V. Harris Jr. and James L. Copeland, were members of the U.S. group that met with Chinese officials in Beijing (Peking) and toured several Chinese aeronautical research facilities.

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Sep. 15, 1980

After the Chinese visit is completed, NASA officials and the Chinese delegation intend to explore possibilities for cooperation in civil aeronautical research and development that is of mutual interest.

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SCHEDULE OF EVENTS

The Chinese aeronautics delegation will be at NASA-Langley for three days of technical briefings, discussions and facilities tours, all day Thursday and Friday, Sep. 18-19, and most of Monday, Sep. 22.

According to the U.S. State Department and NASA's Office of International Affairs, most of the Chinese visitors do not speak English and they do not wish to grant interviews to news people during their U.S. visit. Interviews concerning the visitors will be answered by Langley Director Donald P. Hearth. Opportunities for still photography and filming can be arranged through the NASA-Langley Public Affairs Office.

During the visit, the Chinese will stay at the Hilton Inn in Williamsburg. Because they will be here over a weekend, two trips have been planned for them in the area.

Saturday, Sep. 20, they will visit the University of Virginia campus and Monticello in Charlottesville, Va.

Sunday, Sep. 21, they will visit the Wright Brothers Memorial at Kitty Hawk, N.C., and see a demonstration of hang gliding at Jockey's Ridge.

Sunday evening, Sep. 21, they will be entertained at a reception at the home of Langley Director Donald P. Hearth, and an American-style covered dish supper at the home of Roy V. Harris of Langley.

Detailed information on all activities is available through the NASA-Langley Public Affairs Office. News representatives are invited to cover the weekend activities, including the social events at the Hearth and Harris homes.

Maurice Parker
Public Affairs Officer

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Release No. 80-63

For Release: On Receipt

NASA MANAGERS RECEIVE PRESIDENTIAL HONORS

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HAMPTON, Va.--Two managers at NASA's Langley Research Center have been honored with the Presidential Rank of Meritorious Executive.

Dr. Donald P. Hearth, Langley Director, and Dr. Richard T. Whitcomb, recently retired aeronautical research manager, received their awards in special ceremonies at NASA Headquarters.

The Ranks are awarded by the President to career federal employees in the Senior Executive Service whose performance has been exceptional for several years. The Ranks, presented for the first time, were authorized in the Civil Service Reform Act of 1978.

Hearth was honored for "significant accomplishments and progression to increasingly more responsible assignments" in his career. Specific mention was made of his direction of the 1974 "Outlook for Space Study," which was instrumental in planning future national courses of action; his "personal commitment to affirmative action," which led to his appointment as chairman of NASA's first Equal Opportunity Council; and his direction of Langley, which has "contributed greatly to the research environment."

Whitcomb was honored for his contributions to aeronautical research during 37 years at Langley, specifically his development of the area rule, the super-

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Sep. 16, 1980

critical wing and aircraft winglets, "radical departures from aerodynamic theory" that have "resulted in revolutionary advances in aircraft performance." The award stated, "exceptional leadership qualities have enabled you to attract and motivate a team of skilled scientists, and your team's achievements have extended laminar flow state-of-the-art."

A total of 23 NASA executives received Presidential Rank, including two former Langley managers, Edwin C. Kilgore, NASA's Associate Administrator for Management Operations, and A. Thomas Young, Director of NASA's Goddard Space Flight Center.

The Presidential Rank of Meritorious Executive includes a lump sum payment of \$10,000.

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NASA News

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Sept 23
Miami

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Release No. 80-64

NASA LANGLEY RESEARCHER TO JOIN INTERNATIONAL SCIENCE EXPEDITION

HAMPTON, Va.--A researcher at NASA's Langley Research Center will participate in an October international science expedition on the Atlantic Ocean, which will help scientists evaluate man's impact on the Earth's troposphere.

Wesley R. Cofer III will join other researchers from the United States and throughout Europe in conducting experiments to aid scientists in the study of environmentally important atmospheric trace gases.

The expedition begins Oct. 7 at Hamburg, West Germany, and ends Nov. 7 or 8 at Montevideo, Uruguay. Leading the group is Dr. Wolfgang Seiler of the Max-Planck Institute for Chemistry in West Germany. Seiler is considered one of the world's foremost authorities on global air pollution measurements.

During the expedition, Cofer will measure atmospheric hydrocarbon concentrations with an instrument developed at Langley by Cofer and Gerald C. Purgold.

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Sept. 23, 1980

Cofer said the expedition will help scientists evaluate man's increasing impact on the troposphere, the region of the atmosphere in which most of man's activities are conducted.

Certain atmospheric trace gases are known to greatly influence air quality and to potentially influence the Earth's climate. Hydrocarbons have been shown to play a vital role in tropospheric photochemical cycles, such as the ozone cycle, but their sources, particularly natural sources and concentrations, are not well known.

The expedition, conducted on the research vessel FS Meteor, will provide measurements from both the northern and southern Atlantic.

Cofer said he expects to see definite differences in hydrocarbon concentrations in the northern and southern hemispheres since the Earth's northern hemisphere is more populated and highly industrialized. The southern hemisphere, conversely, should more closely resemble a natural troposphere, less perturbed by man's activities.

The instrument, which will be used in a marine environment, was originally developed for aircraft use in the 1978 and 1979 Southeastern Virginia Urban Plume Study, a NASA-Langley research program to evaluate remote sensor technology.

That study involved tracking a plume of atmospheric pollutants from Hampton Roads up the Eastern Shore of Virginia.

Cofer said the technology required for aircraft measurement of hydrocarbon plumes resulted in the development of the NASA Langley instrument that proved superior to other hydrocarbon measuring instruments.

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Release No. 80-67

REFUSE-FIRED STEAM GENERATING PLANT DEDICATION SET

HAMPTON, Va.--A refuse-fired steam generating plant in Hampton, Va. will be dedicated at 10:30 a.m., Oct. 9, at the site on Wythe Creek Road, next to the NASA Langley Research Center Impact Dynamics Research Facility.

U.S. Senator John W. Warner (R-Va.) will give the principal address during the dedication of the \$10.4 million facility which transforms refuse into energy.

Other officials attending the ceremony will include Dr. Robert A. Frosch, NASA Administrator; Billie J. McGarvey, NASA Headquarters Facility Division Director, Washington, D.C.; Brig. Gen. W. Troy Tolbert, Commander, First Tactical Fighter Wing, Langley Air Force Base; Thomas J. Gear, Mayor of the City of Hampton; and other NASA, Air Force and Hampton City officials.

The plant, funded by NASA, the City of Hampton and the U.S. Air Force, will operate 24 hours a day, seven days a week. The plant's systems are now being tested and officials hope to have the facility fully operational in November.

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Oct. 2, 1980

Standard household refuse, such as paper and food waste, from the City of Hampton, the Langley Research Center, Langley Air Force Base, Fort Monroe and the Veterans Administration will be burned at the plant.

Items such as appliances and furniture, and the ash from the plant, will be disposed of at the Hampton landfill.

Officials do not expect any odors or refuse to pollute the environment around the plant. The ash will be watered down and hauled in enclosed trucks to prevent it from contaminating the area along the route to the landfill.

Odors from the refuse will be dissipated in the plant. The gases which are expelled through the plant's stacks will meet or exceed state and federal environmental protection regulations.

The plant, which is on NASA property, will be leased to and operated by the City of Hampton. The steam will be sold to NASA-Langley for heating and cooling its facilities.

The plant is the first such facility sponsored by a city government and federal agencies.

The program originated during NASA-Langley studies regarding energy conservation projects to improve the community's environment.

The plant will:

- * Greatly extend the life of Hampton's sanitary landfill, and eliminate the area's federal sanitary landfill.

- * Improve the environment by providing a more acceptable means of refuse disposal.

- * Reduce the City of Hampton's refuse disposal cost through the sale of energy, produced by the plant, to NASA-Langley.

- * Save about two million gallons each year of fuel oil, now being bought by NASA-Langley for its steam system.

The process of using refuse to produce steam follows a relatively simple procedure.

A truck loaded with refuse drives on the plant's tipping floor and drops its load into a refuse pit, which has a capacity of 600 to 800 tons.

A crane then picks up the refuse and drops it through a chute; at the bottom of the chute the refuse is pushed into a furnace.

The heart of the refuse-burning plant is two water-walled boilers that reduce solid waste to ash through incineration in the furnace.

As the refuse is burned, the ash falls out of the boilers on to conveyors. It is then transported to the city landfill. The volume of the ash will amount to only about one-seventh of the solid refuse brought to the plant.

The water that flows through the walls of the boiler is converted into steam to heat or cool the facilities at NASA-Langley. About 300 million pounds of steam will be produced each year.

The gases in the boiler exit through an electrostatic precipitator, which cleans the gases before they are expelled into the atmosphere.

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EDITOR'S NOTE: Because of the ceremony, it is requested that if any still photographs or filming need to be done inside the plant, it should be done Oct. 8 or early Oct. 9. All arrangements for photography and filming can be made through the NASA-Langley Public Affairs Office (804) 827-2934.

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RELEASE NO. 80-68

BLANKENSHIP NAMED MATERIALS DIVISION CHIEF AT NASA-LANGLEY

Hampton, Va. -- Charles P. Blankenship has been named Chief of the Materials Division at NASA's Langley Research Center. He is former Head of the Materials Applications and Composites Branch in the Materials Division at NASA's Lewis Research Center in Cleveland, Ohio.

Blankenship's appointment was announced by Langley Director Donald P. Hearsh and was effective September 17.

As Chief of the Materials Division, Blankenship will manage the division that conducts research on advanced structural materials such as metals, polymers and composites; structural characteristics of materials; damage tolerance and integrity of aerospace vehicle structures; and applying advanced materials to aircraft and space vehicles.

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October 2, 1980

Blankenship began his NASA career at the Lewis center in 1961. He was a U. S. Air Force Officer, assigned to Lewis, until 1964. From then until 1968 he was a materials engineer conducting fabrication development projects for nuclear propulsion system components.

He was appointed Head of the Materials Processing Section in 1968, Head of Materials Projects Section in 1972, Chief of the Materials Applications Branch in 1977 and Chief of the Materials Applications and Composites Branch in 1979. In these positions, Blankenship helped manage material technology programs for various power and propulsion systems, including high-temperature super alloys for aircraft turbine engines, structural ceramics for automotive turbine engines and high-temperature iron alloys for automotive stirling engines, and for research in polymer and metal matrix composite materials.

Blankenship was born in Bluefield, W. Va. He received a bachelor of science degree and a master of science degree in metallurgical engineering from Virginia Polytechnic Institute in 1960 and 1962.

The author of over 20 technical papers on high-temperature materials and their applications, Blankenship is a member of the American Society for Metals.

He and his wife, Gayle, live in Poquoson, with their two sons.

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RELEASE NO. 80-69

SMALL BUSINESS WORKSHOP PLANNED AT NASA-LANGLEY

Hampton, Va. -- "Small is beautiful. "

To further that philosophy, a workshop on "Small Business Shop and Manufacturing Techniques" will be held at the Langley Research Center Oct. 8, sponsored by the Small Business Administration, the Peninsula Chamber of Commerce and NASA-Langley.

The sponsors hope the workshop will be the first in a series of nationwide programs for small businesses. Peninsula Chamber President Sylvia Berry and Langley Director Donald P. Heath believe that "small businesses are vital to our way of life and to the innovative process. We hope that this first workshop will provide an opportunity to learn new ideas..." they said.

Approximately 240 small business people have been invited to the workshop, which will be held at Langley's Activities Center, beginning with an 8 a.m. welcome by Director Heath.

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October 3, 1980

Subjects discussed and explained during the day-long sessions will include technology utilization, government patents and contracting with the government. Tours of several Langley technical laboratories will be conducted and the workshop will end with an evaluation by those in attendance.

The workshop is the result of an attempt, instigated by Congressional act in July 1980, to find ways of helping small businesses better attain the expertise, knowledge and technologies that are generated by the federal government. Regional workshops will be held, each focused on a particular category of businesses.

The workshop at Langley will be limited to small shop and manufacturing businesses in Virginia, North Carolina, Maryland and the District of Columbia.

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RELEASE NO. 80-70

NASA-LANGLEY APPRENTICES TO GRADUATE

Hampton, Va. --Thirteen Langley Research Center apprentices will receive their journeyman certificates Friday, October 10, at the thirty-sixth annual Completion Exercises for Engineering Technicians.

The ceremony will begin at 1:30 p.m. in the Activities Center, Building 1222.

Robert L. Ballentine, Director of the Regional Bureau of Apprenticeship and Training, will be the keynote speaker. Langley Director Donald P. Hearth will preside at the ceremony and will give special recognition to the honor graduates. Rev. Jack L. Hamilton of the Riverside Baptist Church in Newport News will give the invocation.

Brian M. Webber, Electronics Technician in the Analysis and Computation Division, will be the speaker for the class of 1980 and Malcolm P. Clark,

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October 3, 1980

Head of the Training and Educational Services Branch, Personnel Division, will present the certificates. Special music will be provided by the U. S. Continental Army Band under the direction of Capt. Kenneth H. Rose.

The graduates and their trades are:

Engineering Technicians (Mechanical Development), Fabrication Division: Danny A. Barrows and Timothy J. Marshall.

Electronics Technicians, Fabrication Division: Vincent L. Cowling and Joseph M. Goodwin.

Engineering Technician (Avionics), Flight Mechanics Division: Robert T. Fults, Jr.

Engineering Technicians (Research Facilities Operations), Operations Support Division: George E. Geiger, Edward A. Modlin and Peter Toth.

Electronics Technician, Flight Electronics Division: Edward H. Kist, Jr.

Engineering Technician (Aerospace Model Development), Fabrication Division: John B. Kovtun.

Electronics Technician, Instrument Research Division: Robert L. Lutinski, Jr.

Engineering Technician (Materials Processes), Fabrication Division: Edward C. Taylor.

Electronics Technician, Analysis and Computation Division: Brian M. Webber.

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Honor Graduates are: Brian M. Webber, Summa Cum Laude; Edward H. Kist, Jr. and Timothy J. Marshall, Magna Cum Laude; and Robert T. Fults, Jr., George E. Geiger and Edward C. Taylor, Cum Laude.

Ballentine has been the Regional Director for four years, working in cooperation with state apprenticeship agencies. He is responsible in the training of over 30,000 apprentices now participating in over 2,000 programs that are registered with the federal or state governments.

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RELEASE NO. 80-71

SERVICE AWARDS CEREMONY HONORS NASA-LANGLEY EMPLOYEES

Hampton, Va. --The Annual Service Awards ceremony, honoring employees with 40, 35 and 30 years of service, and the recipients of the Public Service and the Outstanding Volunteer Service awards, will be held at Langley Tuesday, October 14.

The ceremony will begin at 1:30 p.m. in the Activities Center, Building 1222.

Langley Director Donald P. Heath will present service emblems and certificates to the following:

Forty Years' Service: Joseph V. Boyle, Jr; W. Cecil Burtner; Percy E. Garrington; Joseph Getsug; D. Eugene Hicks; Oscar E. Hillard; Benjamin M. Tingelhoff; and W. Robert Wade.

Thirty-five Years' Service: Roger A. Anderson; Maurice F. Armistead; Robert A. Babcock, III; Charles A. Baldwin; Ivan E. Beckwith; Freda N. Bloch; Leon A. Blount, Jr.; Walter E. Bressette; William A. Brooks, Jr.;

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October 6, 1980

Joseph B. Bunting; E. Curtis Burt, Jr.; Ralph M. Byers;

John E. Canady, Jr.; Matthew Carli, Jr.; James D. Church;

Sherman A. Clevenson; Herbert J. Cunningham; Walter J. Dale;

Robert C. Dreher; James C. Dunavant; Ruby H. Felker, Nancy C.

Ferro; Edward N. Fleenor, Jr.; Donald E. Forney; David F. Fromal;

Thomas J. Gibbons; Otho R. Godwin; Albert W. Hall; Jane S. Hess;

Robert R. Howell; Robert L. Hunt; Ruth H. Hute; William B. Igoe;

Mary M. Jenkins; Mary C. Korycinski; Abraham Leiss; James W. Lynch;

Charles G. Marple; Frederick R. Matthews; John R. McGehee; James W.

McNamara, Jr.; Frank E. Mershon;

Theodore P. Molchan; A. Ernest Moore; Collis P. Moore, Jr.;

Garland J. Morris; Odell A. Morris; Harris B. Pate, Jr.; Richard A.

Pride; Albert A. Schy; Edwin C. Sealey; John L. Sewall; Ashley B. Smith;

Carl H. Stafford; Richard W. Storey, Jr.; Willard L. Sullivan;

Warren A. Walls; Raymond J. Ward; Melvin L. Watkins; Kathleen C.

Wicker; R. Earl Williams; Thomas P. Wright, Jr.; Paul L. Yeager; and

James A. Zitzelberger.

Thirty Years' Service: Abner M. Askew; Gordon H. Bowie; Harry A.

Brandt; William R. Burks; Thomas A. Byrdsong; Jackie E. Cain; Robert H.

Coultrip; Alfred K. Curtis;

William T. Davis; William R. DeShazor; Robert N. Desmarais;

Nellie S. Dick; Jean B. Elliott; Fred Ferrari, Jr.; Kenneth W. Holley;

Walter Illg; Muriel M. Jarrett; Thelma F. Jones; Robert H. Kirby;

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Ernest A. Mackley; Donald R. McFarland; Mary J. Mesic; John P. Mugler, Jr.; Sarah J. O'Keefe; Thomas E. Pepe; William R. Rash; Charles A. Rogers, Jr.; Charles H. Russell;

R. Paul Seaford; Robert B. Spiers, Jr.; Henry T. Thornton, Jr.; Sue E. Wilder; Marguerite C. Williams; and Raymond H. Womble.

The Langley Public Service Group Award will be presented to the Langley Docent Staff for "outstanding contributions in informing the general public on NASA's current and future programs." The Langley Docents are a group of volunteers who conduct tours of the Langley Visitor Center and the Tech House. They include Louis J. Bjostad, Jr.; Clarence A. Brown, Jr.; Betty H. Brummer; A. Louise Caplan; Fred F. Eichenbrenner; Lloyd J. Fisher, Jr.; Nita J. Hamilton; Margaret C. Hewes; David Hillerson; and Warner Mooney.

Outstanding Volunteer Service awards will be presented to Frederick R. Morrell, Flight Electronics Division, for "providing leadership in the local communities through religious, social and youth activities" and John J. Treier, an Army employee assigned to the Operations Support Division, for "devoted effort and leadership in initiating and developing an advanced life support system for the general welfare of the Isle of Wight area."

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RELEASE NO. 80-72

'ROOTS' AUTHOR TO SPEAK AT HAMPTON COLISEUM

Hampton, Va. --Alex Haley's name became a household word in 1976 with the publication of his best selling book, "Roots," for which he received a Pulitzer Prize.

The internationally known author, traveler and lecturer will discuss his experiences during the 12-year search for his heritage at the "Our Future in the Cosmos" public lecture Thursday, October 16. Haley's lecture, titled "A Saga of Black History--The Future of the Family," will begin at 8 p.m. in the Hampton Coliseum. The public lecture series is sponsored by NASA and the College of William and Mary. Free tickets are available at the Coliseum box office.

In his lecture, Haley will discuss his years of research and documentation of the two-century saga of an American black family through generations of turbulence and change. He will also reflect on the future of the family.

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October 9, 1980

Haley traveled extensively during his research, making 25 trips to Africa, talking with hundreds of people in many countries and visiting libraries, both here and abroad, seeking information and clues that enabled him to trace his maternal family back to an African Mandingo youth named Kunta Kinte.

The success of the TV series "Roots" in 1977 led to another mini-series, titled "Roots: The Next Generation," which was aired in 1979. More recently, Haley collaborated with Norman Lear to create a television series titled "Palmerstown, U. S. A.," a story about two nine-year-old boys who grew up in a small town in the South during the Depression.

Haley was born in Ithaca, N. Y., in 1921 and was raised in Henning, Tenn. The oldest of three sons of a college professor and a grammar school teacher, he finished high school at 15. He enlisted in the U. S. Coast Guard in 1939.

After 20 years in the military service, Haley retired to a full-time career as a writer. He achieved free-lance sales to magazines such as Harper's, The Atlantic Monthly, and The New York Times Magazine. Then he became an assignments writer for Readers Digest and Playboy, where he initiated the enduring "Playboy Interviews" feature.

Among the many people Haley has interviewed was Malcolm X, the controversial black leader. This interview led to Haley's first book, "The Autobiography of Malcolm X," which was selected as one of the "Ten Best American Books of the 1960s Decade."

Haley continues to work on a new book, "Search," the story of the frustrations and joys he experienced in the quest for his ancestors.

NOTE TO EDITORS: Alex Haley will give the same lecture at the Langley colloquium Thursday afternoon in the Activities Center, Building 1222.

A news briefing will be held at 1 p.m. , and the lecture will begin at 2 p.m.

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RELEASE NO. 80-73

DYNAMIC ENGINEERING, INC. AWARDED NASA CONTRACT

Hampton, Va. -- Dynamic Engineering, Inc. of Newport News, Va., has been awarded a NASA contract for the design and fabrication of dynamic models for use in NASA research and development programs.

The cost-plus-fixed-fee contract, valued at approximately \$4.3 million, includes the personnel, equipment, materials and facilities necessary to perform feasibility design studies, engineering design and fabrication, calibration and assembly of dynamic scaled aerospace related models, systems and associated support equipment.

The models, used primarily for wind tunnel testing, will generally fall into three classes: general performance models designed to hold a fixed geometry through a range of angle-of-attack and dynamic pressures; free flight and spin models designed to simulate mass properties of prototype

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October 10, 1980

aircraft; and aeroelastic models designed for simulating configuration changes with load for performance or flutter investigations.

Complete models or portions of models will be constructed of fiberglass reinforced resins, woods, metals, moldable and formable materials or combinations of these.

The three-year contract, with a two-year option, will be managed by NASA's Langley Research Center. The contract work will be performed at the company's Newport News, Va., and City of Industry, Calif., plants.

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RELEASE NO. 80-74

DIXON, CARD TO HEAD NASA-LANGLEY DIVISIONS

Hampton, Va. -- Two new division chiefs in the Structures Directorate at NASA's Langley Research Center have been selected by Langley Director Donald P. Hearsh.

Dr. Sidney C. Dixon has been named Chief of the Loads and Aeroelasticity Division and Dr. Michael F. Card has been named Chief of the Structural Mechanics Division.

Dixon will head the organization responsible for research in advanced structural concepts and designs, flight loads, aeroelasticity, unsteady aerodynamics and thermoelasticity.

Card will manage the division that does research in structural dynamics, solid mechanics, failure analysis and composite mechanics.

Dixon began his Langley career in 1958 as a research engineer in the Structures Research Division. He became Head of the Design Studies Section in 1970 and Head of the Thermal Structures Branch in 1974. He has been

--more--

October 20, 1980

responsible for research in aerothermal loads, thermal-structural analysis, and structural concepts for supersonic and hypersonic cruise vehicles and Earth-to-orbit space transportation systems.

A native of Durant, Okla., Dixon received a bachelor of science degree in mechanical engineering in 1955 and a master of science degree in applied mechanics in 1963, both from the University of Virginia. He earned a doctorate in engineering mechanics from Virginia Polytechnic Institute in 1967. He was in the U. S. Navy from 1955 to 1958.

The author of more than 20 technical publications, Dixon is a member of the American Institute of Aeronautics and Astronautics.

He and his wife, Marion, live in Gloucester Point. They have three children.

Card joined the Langley staff in 1958 and was appointed Head of the Structural Evaluation Section in 1970.

He was selected by the President's Commission on Personnel Interchange in 1972 as one of three NASA employees to participate in the Executive Interchange Program. While in the one-year program, he worked at TRW Systems.

He became Head of the Structural Mechanics Branch in 1974 and Head of the Structural Dynamics Branch in 1979. He served as team leader for interdisciplinary research in large space systems technology and has done research on advanced aircraft and spacecraft structures, dynamics of space payloads, nonlinear analysis techniques, and dynamics of the Space Shuttle system.

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The author of many papers on the structural mechanics of metallic and composite plate and shell structures, Card is a member of the American Institute of Aeronautics and Astronautics and is Chairman of its Structures Technical Committee. He is a member of the ATLASS program planning group, where he serves as Chairman of the Analysis and Integrated Design Team and as a member of the Systems Studies Team.

Born in Seattle, Wash., Card received a bachelor of science degree in aerospace engineering from the Massachusetts Institute of Technology in 1958. He earned master of science and doctor of philosophy degrees in engineering mechanics from Virginia Polytechnic Institute in 1964 and 1970, respectively.

Card and his wife, JoAnn, live in Williamsburg. They have three children.

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RELEASE NO. 80-75

GRADY RECEIVES NASA'S OUTSTANDING HANDICAPPED EMPLOYEE AWARD

Hampton, Va. --George C. Grady, an engineering technician in the Operations Support Division at NASA's Langley Research Center, has been named NASA's Outstanding Handicapped Federal Employee of the Year. The award was presented to Grady in a special ceremony held at Langley Friday, October 10.

Grady was severely injured in 1973 while working on one of the pressure systems in the High Pressure Air Compressor Facility. This central plant supplied high pressure air to the research wind tunnels and other facilities at Langley.

As a result of his injuries and being immobilized for over a year, Grady lost most of the use of both arms and legs. He went through a rehabilitation program at Fishersville, Va., and it was determined he had a 95 percent disability.

Although Grady was urged not to return to work and was eligible for compensation, he insisted on being gainfully employed and returned to Langley.

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October 20, 1980

With his experience and background, he was assigned to the Fluid Systems Section in the Operations Support Division. His duties in the High Pressure Verification Facility include the hydro-testing of high pressure piping, systems and components; the verification and testing of relief valves and devices; the certification and calibration of pressure gauges and devices; and the fabrication of hose assemblies. In addition, Grady is an instructor for Langley's Silver Soldering and Brazing course, which is an on-going training course for the center's technicians.

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RELEASE NO. 80-76

NASA HONORS EMPLOYEES AT AWARDS CEREMONY

Hampton, Va. --NASA will honor employees who have made outstanding contributions in aeronautical and aerospace research during the past year at the Annual Honor Awards Ceremony at the Langley Research Center Thursday, October 30.

Dr. Robert L. Krieger, Director of NASA's Wallops Flight Center, Wallops Island, Va., will be the guest speaker for the ceremony, which will begin at 1:30 p.m. in the Hangar, Building 1244.

NASA awards will be presented to the following:

Outstanding Leadership Medal: Paul F. Holloway and Howard B. Edwards.

Exceptional Scientific Achievement Medal: Anthony Jameson, Courant Institute of Mathematical Sciences, New York University; Dr. Casimir J. Jachimowski; and M. Patrick McCormick.

Exceptional Service Medal: Emanuel Boxer; Harry W. Carlson; Luther R. Gentry; William P. Gilbert; Jane S. Hess; John P. Mugler, Jr.; Clemans A.

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October 21, 1980

Powell, Jr.; Earl F. Stahl; and David C. Woods.

Public Service Award: Charles W. Boppe of Grumman Aerospace Corporation.

Equal Employment Opportunity Medal: John J. Cox.

Group Achievement Award: Fuel Efficient Profile Descents in the Denver Time Based Metering ATC Environment, Graphite Fiber Risk Analysis Team and the ACEE Composite Aircraft Structures Team.

Langley awards will be presented to the following:

H. J. E. Reid Award: Dr. Fereidoun Farassat.

Twenty -two Group Achievement awards will also be presented.

Krieger has been Director of Wallops Flight Center since 1959. Before that time, he managed the Pilotless Aircraft Research Station at Wallops Island, where he built an organization of research operations, mechanical service, maintenance and administration that has launched over 11,000 research test vehicles.

He has twice received NASA's Outstanding Leadership Medal and NASA's highest award, the Distinguished Service Medal. He was recently honored with the Presidential Rank of Meritorious Executive for "greatly contributing to the nation's aeronautical and aerospace research efforts for more than 41 years, including 32 years as Director of the Wallops facility."

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Release No. 80-77

NOTE TO EDITORS: VOYAGER 1-SATURN ENCOUNTER NEWS BRIEFING SET

NASA's Voyager 1 spacecraft is approaching Saturn and will make its closest approach to the planet Nov. 12.

NASA will hold a Voyager pre-encounter news briefing at 10 a.m. Oct. 28 at NASA Headquarters, Washington, D.C.

A connection to the briefing will be made at NASA's Langley Research Center for anyone interested in listening. Questions during the briefing may be asked from Langley by telephone through the newsroom at NASA Headquarters.

Speakers during the briefing will include Dr. Edward Stone, Voyager project scientist; Raymond Heacock, Voyager project manager; Dr. Bradford Smith, Voyager imaging team science leader; Andrew Stofan, acting NASA Associate Administrator for Space Science; and Angelo "Gus" Guastaferrro, NASA Director of Planetary Programs.

For further information, call the Langley Public Affairs Office on (804) 827-2934.

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Oct. 23, 1980

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RELEASE NO. 80-78

SAUBER PROBES 'FOURTH KINGDOM'

Hampton, Va. --To the three kingdoms--animal, vegetable and mineral--that have existed since the beginning of life on Earth, there now can be added a "fourth kingdom," which consists of the fruits of the human mind; among those fruits is technology, according to William J. Sauber, author of the book "The Fourth Kingdom."

Sauber, Long-Range Project Manager at Dow Chemical Company, Midland, Mich., will discuss "The Fourth Kingdom--Man and Technology" at the Langley colloquium Monday, November 10, in the Activities Center, Building 1222.

The lecture, illustrated by 70 color slides, will begin at 2 p.m., preceded by a news briefing at 1:15 p.m.

Sauber perceives in the "fourth kingdom" a kind of directed pattern which will carry the human seed (some few hundred brave colonists) on a

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November 3, 1980

200-year trip through space to colonize a new planet in the star system.

Sauber thinks that worldwide efforts toward seeding the universe with life will give the global human family a solution to its search for purpose, dignity and peace.

The speaker's formal training and early career was in engineering. He has accumulated 25 years of experience with Dow, 14 of them in short and long-range business development and general staff management assignments. Among those was the assignment to serve as Dow's liaison to Windecker Research, Inc., where he helped develop the world's first FAA-certified structural plastic airplane, the Windecker Eagle.

Sauber's current activities include evaluating energy options for the future and serving as a member of the International Development Committee, working with global technology development and as liaison to the United Nations Environment Program.

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RELEASE NO. 80-93

MARTIN MARIETTA CORPORATION SELECTED FOR NASA CONTRACT

Hampton, Va. -- Martin Marietta Corporation of Denver has been selected for negotiation leading to award of a NASA contract for the design and development of a modular, programmable, real-time processing system for future NASA space missions.

The contract, valued at approximately \$2 million, calls for the use of new signal processing technologies now emerging to allow many processing functions -- previously performed on the ground -- to be performed on board the spacecraft.

Under the contract, Martin Marietta will provide test support and demonstration equipment, to include test data and control of the software and display hardware.

The functional elements to be developed include radiometric corrections, geometric correction and data packetization. Operation of these processing functions will be demonstrated by the contractor on LANDSAT-like data in a laboratory environment. These advanced signal processing functions are to be implemented in wide-temperature-range, commercial-grade electronic components.

The two-year contract will be managed by NASA's Langley Research Center, Hampton, Va. The work will be done at the company's Denver facility.

- end -

November 10, 1980

NASA News

National Aeronautics and
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RELEASE NO. 80-94

CRUMBLY NAMED TO HEAD DIVISION AT NASA-LANGLEY

Hampton, Va. --Kenneth H. Crumbly has been named Chief of the Projects Management Systems Division at NASA's Langley Research Center in Hampton.

Formerly a physicist in the Instrument Research Division, Crumbly will be responsible for project resources, schedules, configuration management and documentation, technical administration, early planning for new projects, budget preparation and execution and financial analysis. Among the major Projects Directorate programs are Aircraft Energy Efficiency, the Earth Radiation Budget Experiment, Large Space Systems Technology, the Scout launch vehicle and the Long-Duration Exposure Facility.

Crumbly began his NASA career in 1961 as a physicist in the Instrument Research Division. From 1965 to 1972 he concentrated on the technical

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November 21, 1980

management of the Flight Instrumentation Division, Research Staff Office, Office of the Assistant Director and Office of the Director for Electronics.

From November 1972 to August 1973, Crumbly served a Congressional Operations Fellowship at NASA Headquarters in Washington, D. C. Upon his return to Langley, he specialized in electro-optics, infrared detectors, atmospheric particle analysis and remote sensing stratospheric aerosols.

Before joining NASA, Crumbly was a spare parts specialist at Lockheed Aircraft Company and a production control specialist at General Electric Medium Transformer Plant, where he graduated from the apprentice school.

A native of Rome, Ga., Crumbly earned a bachelor of science degree in mathematics from Shorter College in 1959. He received a master of science degree in administration from George Washington University in 1971.

The author or co-author of eight technical publications, Crumbly has received two Group Achievement awards.

Crumbly and his wife, Clara, live in Hampton. They have two sons.

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NASA News

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RELEASE NO. 80-95

NASA REVIEWS TECHNOLOGY FOR LARGE SPACE SYSTEMS

Various kinds of large space structures should start orbiting Earth as early as the middle of this decade, according to NASA researchers who recently met to review progress of the agency's Large Space Systems Technology program.

"We haven't uncovered any technical problems that we expect to be major stumbling blocks," said Harold Bush, a group leader in structural concepts at NASA's Langley Research Center and co-moderator of the program's second annual technical review, held at Langley.

Researchers at several NASA centers are working together to develop the technology needed to send huge structures into Earth orbit and successfully deploy or erect them.

New technology was the star of the show at the technical review, attended by nearly 200 representatives of NASA, the Department of Defense, universities and several aerospace companies.

Bush says that there are problems yet to be resolved; problems that will require a high degree of ingenuity and innovation but, by using common sense and by applying "the basics" (fundamental scientific knowledge), large space systems are technically feasible.

The Space Shuttle, core of NASA's Space Transportation System for the 1980's

November 26, 1980

more

and beyond, will make large space systems possible. The first test flight of the Shuttle Orbiter "Columbia" is scheduled for March 1981. The Orbiter, with its 15-by-60-foot cargo bay, has been called the first space truck -- and for good reason. It will carry many times more payload than even the largest expendable rocket used today. Columbia and its sister ships to follow will be reusable, each making many flights into the near space of Earth orbit.

As a result, many kinds of large space systems will be possible. Space antennas with surface diameters equal to or greater than a football field, for example, are planned to make communications in remote areas possible and communications elsewhere more efficient. Today's communications satellites will be dwarfed by such large space antennas in both size and communications capacity.

To illustrate the point, Langley's Robert James, manager of the Large Space Systems Technology program office, cites dramatic advances expected in the area of mobile communications. A wrist radio, a la Dick Tracy, could be used to communicate via satellite with another wearer of a wrist radio or with a motorist using a car radio.

"A relatively inexpensive wrist radio," James explains, "could transmit and receive voice communications over great distances. One person with a wrist radio on the East Coast of the United States, for instance, could talk to another person with a wrist radio as far away as the West Coast. Such a national mobile communications capability is theoretically possible by the use of a single large antenna satellite in geosynchronous (fixed-position) orbit over the U.S.

"And, of course, mobile communications can be important over shorter distances, too. The hiker lost in the woods or the motorist in trouble miles

from help could easily make a call for emergency assistance over their radios.

"The ground units could be small and low-gain because the relay satellite would be huge and high-gain. This is the reverse of present-day systems where satellite antennas are small, necessitating large receiving and transmitting antennas on Earth. Only telephone companies and large organizations can afford the ground equipment needed today for mobile communications of personal messages and other data over great distances.

"Extending our mobile communications capabilities is just one of several applications getting a lot of attention in the development of technology for large space antenna concepts."

Much of the new technology is being directed toward making large space platforms possible, the second major application envisioned for large space systems between now and the year 2000. Large space antennas, even up to 150 meters (492 feet) in diameter, can be automatically deployed from the cargo bay of a single Shuttle Orbiter; large space platforms, however, may take many Shuttle launches to transport all the material needed for their deployment or erection.

This new class of spacecraft, James points out, will likely range from relatively small science and applications platforms to giant space operations centers. A platform would serve as the structural base for scientific studies of space and of Earth resources, among other things. It would carry a collection of instruments and provide each with utilities needed for support. This is in contrast to the more costly practice of using one satellite for one instrument.

A space operations center is conceived as an advanced, manned space

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station. Various space operations could be performed from it, including processing materials in zero gravity, constructing space structures or repairing instruments from other spacecraft.

"In other words, it would give us a base of operations, and that is quite a challenge," says James. "Most people know about Skylab and its astronauts flying around, but this would provide a continuous capability of manned space operations. Depending upon the missions, the number of people would probably grow. It might start out with a few people, then if the center got more and more work to do, more and more people would be needed to work in the labs.

"This is probably going to be a multiple, modular type of vehicle with housing for a unit of people here -- and then another one over here and another over there. The features of this platform are similar to those of smaller platforms in that facilities for power generation, communications, control and keeping the thing in orbit and all are there in one location. But the number of modules could be changed, or the number of work stations and that type of thing.

"Right now, the space operations center is Johnson Space Center's big contribution of NASA for the future. They're relying on the Shuttle. This is one of the platform missions that will take multiple flights. It might take five to ten flights to construct that vehicle in orbit. So there's no way it could be done without the Shuttle -- it's essential to the large space systems program."

Ironically, Bush is of the opinion that the reverse is also true: That technology flowing into large space systems is vital to NASA and the successful use of the Shuttle. "Our ability to utilize the Space Shuttle

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to the fullest," he says, "is largely dependent on the success of the researchers currently participating in the area of large space systems."

In addition to Langley and Johnson, technology for large space systems is being developed by NASA's Marshall Space Flight Center, Goddard Space Flight Center, Jet Propulsion Laboratory, Lewis Research Center and all their contracting organizations, including most major aerospace companies.

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go to symposium
p. 11

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Release No. 80-96

DIRECTLY SUN-POWERED LASER DEMONSTRATED AT NASA CENTER

Hampton, Va.--The world's first gas laser powered directly by sunlight has been demonstrated by two researchers at NASA's Langley Research Center, Hampton, Va.

Researchers Ja H. Lee and Willard R. Weaver directed the light output from a solar simulator onto a quartz tube filled with a gaseous iodide. The light excited the iodide, causing lasing and the emission of a five-watt burst of concentrated light waves.

The directly Sun-powered laser would eliminate the need in current laser systems for intermediate energy conversion to achieve lasing. This eliminates the energy conversion components and reduces the systems size, weight, complexity and cost.

NASA's interest in lasers includes such applications as remote sensing of the Earth and its environment, optical data processing and transfer, and power transmission for space operations.

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Dec. 19, 1980

In one concept, a space-based solar-powered laser system radiates a laser beam to remote space operations. At the operations site, the laser beam can be transformed to conventional energy forms such as electricity or heat. The laser beam could also be converted to propulsive energy in a specially designed space engine which would provide economical orbital transfer of payloads.

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RELEASE NO. 80-97

MOORE NAMED DIRECTOR OF ADMINISTRATION AT NASA-WALLOPS

Hampton, Va. --Frank V. Moore, Chief of the Acquisition Division at NASA's Langley Research Center in Hampton since 1975, has been named Director of Administration at the Wallops Flight Center, Wallops Island, Va., effective in late January.

Moore will be responsible for public affairs, financial management, administrative management, personnel and procurement.

Moore began his NASA career in 1962 as a Contract Assistant. He was appointed Head of the Contract Administration Section in 1970 and Assistant Head of the Research and Development Contracting Branch in 1972. In 1973 he became Assistant Chief of the Procurement Division, now known as the Acquisition Division.

As Chief of the Acquisition Division, Moore is responsible for managing the center's procurement program, which totals nearly \$200 million annually, and advising center management on acquisition-related matters.

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December 12, 1980

Moore was born in Providence, R.I., where he graduated from Mount Pleasant High School. He earned a bachelor of science degree in business administration from the Richmond Professional Institute of the College of William and Mary in 1962. He attended Cornell University from 1969 to 1970 under a National Institute of Public Affairs/Career Educational Award Fellowship. He received a master of business administration degree from the College of William and Mary in 1974.

He is a charter member of the Hampton Roads Chapter of the National Contract Management Association and was designated a NCMA Fellow in 1975. In 1976 Moore received an award from the William A. Jump Memorial Foundation for his achievements in public administration.

The author of numerous articles and papers on contracting and management, Moore received a NASA Special Service Award in 1967 and was recently selected to participate in a Brookings Institute Conference on Business Policy and Operations to be held early next year.

Moore and his wife, Rose, live in Williamsburg. They have two sons.

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RELEASE NO. 81-1

JONES TO SPEAK AT NASA-LANGLEY COLLOQUIUM

Hampton, Va. -- Dr. Kenneth L. Jones, former member of the Viking Lander Imaging Team and now Technical Director of Special Effects at New World Productions in Venice, Calif., will be the speaker at the Langley Research Center colloquium Monday, Jan. 12, 1981.

Jones' lecture, "Cinematic Simulations and Special Effects," will begin at 2 p.m. in the Activities Center, Building 1222. A news briefing will precede the lecture, beginning at 1:15 p.m.

Jones will discuss new space-age technology and special visual effects used by the film industry. Inspired by the success of the film "Star Wars," the motion picture industry has been investing large amounts of money to put space-age technology into their methods of film production. The primary directions of such new technology have been in motion control, optical compositing and analog and digital image synthesis.

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January 7, 1981

Jones said the special effects industry is continually learning about the human perception of visual effects--what information is necessary and sufficient to visually convey either an idea or a sense of realism. Various techniques for increasing the realism of a special effects scene range from physical considerations to the psychological considerations of overloading the senses with additional information, such as decreasing the duration of a scene relative to its information content or adding an appropriate sound track. Jones thinks that space-age simulation may soon incorporate many of the visual ideas originated by the film industry.

Jones worked in image processing at the Jet Propulsion Laboratory in Pasadena, Calif., while a member of the Viking Imaging Team. He recently produced the special effects for the movie "Battle Beyond the Stars."

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Release No: VC-2-81

NASA VISITOR CENTER PRESENTATION SHOWS RESEARCH HIGHLIGHTS OF 1980

The video presentation, "NASA - 1980 Aeronautics and Space Highlights," will be featured at the NASA Visitor Center throughout the month of January.

The continuously shown, fifteen-minute presentation, describes the Voyager Saturn mission. It also takes a look at the sophisticated photographs of the Sun and its energy cycles relayed by the Solar Maximum space probe.

A large portion of "Highlights" is dedicated to the Space Shuttle, NASA's reusable Space Transportation System. The XV-15 Tiltrotor research aircraft that takes off and lands like a helicopter, but flies airborne like a plane, is one of several aeronautic projects reviewed. Wind energy research and NASA efforts to assess the atmospheric impact of the Mount St. Helens' eruptions are some of the other research efforts described in the presentation.

The NASA Visitor Center, located on NASA's Langley Research Center in Hampton, VA, is open Monday through Saturday, 8:30 a.m. to 4:30 p.m. and Sunday, noon to 4:30 p.m. Admission is free.

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*Jan 16
1981*

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RELEASE NO. 81-3

MOORE NAMED FLIGHT ELECTRONICS DIVISION CHIEF AT NASA LANGLEY

Hampton, Va.--William M. Moore has been named Chief of the Flight Electronics Division at NASA's Langley Research Center in Hampton, Va. He is former Assistant Chief for Space of that organization.

Moore will be responsible for the division's research in solid-state electronics and the development of advanced avionics systems for civil aircraft and new techniques for remote measurements of the environment from spacecraft.

Moore joined the Langley staff in 1955 as a radar and telemetry engineer. From 1956 to 1957 he was an instrumentation engineer on the Fleet Ballistic Missile Program at Chrysler Missile Division in Detroit.

Moore returned to Langley in 1957, where he developed the performance telemeter for the X-15 and instrumentation for the Scout rocket. He has served as the Telemetry Specialist on Dyna Soar Instrumentation Group, Head of the Instrument Research Division Digital Techniques Study Group, Head of the Spacecraft Instrument Development Section and Head of the Telecommunications Research Branch.

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January 16, 1981

He has specialized in spacecraft electronic systems, components and devices and has been responsible for the electronic support for most of Langley's space flight projects. He has planned and directed the research programs and flight supporting tasks for space applications, such as the subsystems for the Space Shuttle and the electronic systems for the Viking Program.

Prior to coming to Langley, Moore was a radar field engineer at Sperry Gyroscope in Great Neck, Long Island, from 1952 to 1955. He served in the U.S. Navy from 1944 to 1946 and from 1950 to 1952. He was a participant in the Newport News Shipbuilding and Dry Dock Company's Engineer Training Program from 1949 to 1950.

Born in Hampton, Va., Moore graduated from Upper Darby High School in Pennsylvania. He received a bachelor of science degree in electrical engineering from Swarthmore College in 1949.

The author or co-author of three technical publications, Moore has served as chairman of the Fourth NASA Intra-Center Microelectronic Symposium, Design and Integration Panel for the NASA Observatory - Class Spacecraft Review Board (Garbarini Committee), Communications Group for OART Space Shuttle Integrated Electronic Technology Committee, Software Verification for Viking Computer Source Evaluation Board, Earth Radiation Budget Experiment Source Evaluation Board, LIMS Award Fee Board and ERBE Award Fee Board. He has been a member of the Program Committee for the Third NASA Intra-Center Microelectronic Symposium, NASA Subcommittee for Microelectronic Parts Reliability, Electronics Review Team for Pegasus Satellite Project, Electronic Subsystem Panel for NASA Shuttle Phase-B Source Evaluation Board, NASA Efficient Sensor System Working Group, and Electronic Subcommittee of the Space Technology Advisory Committee.

He was presented the NASA Exceptional Service Medal in 1977 in recognition of significant support to the Viking Project Office; a Langley Special Achievement Award in 1975 and the NASA Group Achievement Award in 1966.

Moore and his wife, Eunice, live in Williamsburg. They have two children.

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RELEASE NO. 81-4

HOWE RETIRES FROM NASA LANGLEY

Hampton, Va.--Edward A. Howe, Chief of the Financial Management Division at NASA's Langley Research Center in Hampton, retired from government service December 26, 1980.

Howe, who began his career in 1943 with NASA's predecessor agency, the National Advisory Committee for Aeronautics, will serve as a reemployed annuitant for three months until his replacement is selected.

Chief of the Financial Management Division since 1958, Howe has been responsible for all areas of finance and accounting except budget preparation and control. He previously served as Fiscal Officer, Head of the Accounting Section, a fiscal accountant and an administrative assistant.

Before coming to Langley, Howe worked for the Carrier Corporation in Syracuse, N.Y., and was in the Army Air Corps Reserve.

Howe earned a bachelor of science degree in administrative (industrial) engineering from L.C. Smith College of Applied Science, Syracuse University, in 1943.

He lives in Hampton,

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January 16, 1981

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RELEASE NO. 81-5

Symposium on Chesapeake Bay Study Scheduled

A symposium on the results of the 1980 Chesapeake Bay Plume Study, which used airborne remote sensors to study the impact of estuarine outflows from the Chesapeake and Delaware Bays on continental shelf ecosystems, will be held January 21 through 23 at the Hospitality House Hotel in Williamsburg, Va.

The study, called "Superflux," was conducted by NASA's Langley Research Center in Hampton, Va., and the Northeast Fisheries Center of the National Marine Fisheries Service of NOAA. Other participants in the study and symposium include universities and state agencies interested in the two bays.

The study was initiated in 1980 to define the role of remote sensing in monitoring and assessing the effects of pollution on marine resources. Man's alteration of estuaries, such as rivers, has potential impact on the larger marine environment.

Superflux included three interactive aircraft-boat experiments to characterize the spatial extent, variability and bio-chemical properties of the Chesapeake Bay plume.

The three experiments, each involving multiple missions, were conducted in March, June and October 1980 to coincide with maximum, intermediate and minimum fresh water input, respectively.

- more -

The symposium will include presentations and discussions on the results of the experiments conducted during the study. It will conclude with a discussion of implications of the results to marine resource monitoring and to remote sensor science.

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January 20, 1981

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RELEASE NO. 81-6

MOORE HEADS ACQUISITION DIVISION AT NASA-LANGLEY

Hampton, Va.--Robert R. Moore has been selected to head the Acquisition Division at NASA's Langley Research Center in Hampton. He is former Associate Chief of that organization.

As Chief of the Acquisition Division, Moore is responsible for managing the center's procurement program, which totals nearly \$200 million annually, and advising center management on acquisition-related matters.

Moore joined the Langley staff in January 1962 as a procurement agent. He was named Assistant Head of the Research and Development Contracting Branch in October 1973, Assistant Chief of the Procurement Division, now known as the Acquisition Division, in November 1975 and Associate Chief in November 1978.

He received a bachelor of science degree in business from Virginia Commonwealth University in 1959. He completed the program for Management Development at Harvard's Graduate School of Business Administration in 1973.

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January 27, 1981

A charter member of the Hampton Roads Chapter of the National Contract Management Association, Moore was designated a certified professional contracts manager by the association in 1975. He has taught procurement and contract management courses for the University of Virginia's School of Continuing Education.

Moore and his wife, Sally, and their three sons live in Newport News.

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RELEASE NO. 81-7

SATURN ENCOUNTER, COMPUTER GRAPHICS TOPICS OF TWO NASA-LANGLEY COLLOQUIUMS

Hampton, Va.--An up-to-date report on the Voyager I encounter with Saturn and a discussion of the use of computer-aided graphics for engineering design and analysis are the topics of two Langley Research Center colloquiums to be held in February at the Activities Center, Building 1222.

On Monday, Feb. 2, Dr. Geoffrey A. Briggs, Deputy Director of NASA's Solar System Exploration Division at NASA Headquarters in Washington, D.C., will discuss "Results from the Voyager I Encounter with Saturn." On Monday, Feb. 9, Dr. Joel N. Orr, President of Orr Associates, Inc., Danbury, Conn., will speak on "Computer Graphics and Facility Design."

Both colloquium talks, illustrated by slides, will begin at 2 p.m. A news briefing will precede each lecture at 1:15 p.m.

Last November's Voyager I encounter with Saturn has transformed the state of scientists' understanding of the Saturnian system in the same way that earlier encounters with Jupiter changed their thinking about that planet and its moons.

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January 27, 1981

Close-up photographs reveal that Saturn's brilliant ring system consists not of a few broad rings but of innumerable individual rings whose complex structure is not yet understood. Other baffling characteristics of the rings have been discovered, including dark radial "spokes" that are rotating about Saturn in an entirely different fashion from the individual orbiting particles that make up the rings themselves.

The moons of Saturn belong to a different class of objects from the Galilean satellites of Jupiter: they possess a range of characteristics whose diversity is presenting challenges to planetary geologists.

Briggs will discuss the data received from preliminary analysis of the dozen Voyager investigations. Briggs, who was a member of the Mariner 9, Viking Orbiter and Voyager imaging teams working on the scientific staff at the Jet Propulsion Laboratory in Pasadena, Calif., thinks the results that have become available immediately demonstrate that the Voyager encounter with Saturn will command a significant place in the history of science and exploration.

Orr's presentation will show how computer-aided graphics can be used as a tool for architects, engineers, planners and managers.

Orr has worked for private industry, metropolitan government and as a freelance consultant. In 1976 he formed Jerusalem Systems, now known as Orr Associates, Inc., a firm which specializes in advisory and consulting services in computer graphics.

He is the author of "The Computer Graphics Extravaganza," a videotape series and workbook on business graphics and, soon to be published, "A Manager's Guide to CAD/CAM" and "A Manager's Guide to Business Graphics." He is on the Seminar Staff of Harvard University's Laboratory for Computer Graphics and Spatial Analysis and is editor and a member of the board of directors for the National Computer Graphics Association.

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RELEASE NO. 81-8

NASA-LANGLEY OBSERVES BLACK HISTORY MONTH

Hampton, Va.--Black History Month is observed nationally during February to recognize the contributions of black Americans and to remind everyone of the nation's commitment to creating an environment wherein people of all races and colors can share the riches of this country.

The Langley Research Center will observe Black History Month by hosting a special program and science exhibit in the Langley Activities Center, Building 1222.

The exhibit, featuring science projects of juniors and seniors in Pure and Applied Sciences at Hampton Institute, will be on display in the lobby of the Activities Center from Feb. 9 to 13.

The Office of Equal Opportunity Programs will sponsor a program, "Minorities in Science and Technology," Thursday, Feb. 12, at 9 a.m.

Langley Deputy Director Richard H. Petersen will welcome employees and guests, and Rabbi Aryeh Weil of Adath Jeshurun Synagogue in Newport News will give the invocation.

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February 2, 1981

Dr. Eugene M. Deloatch, Chairman of the Department of Electrical Engineering at Howard University, will be the guest speaker.

During his 20 years with Howard, Deloatch has had several special assignments in industry and has been principal investigator of numerous research grants. He has been Chairman of the Electrical Engineering Department since 1975.

Before joining the faculty of Howard University, Deloatch was a systems engineer with New York State Electric and Gas Corporation.

Deloatch received bachelor of science degrees in mathematics from Tougaloo College in Mississippi and in electrical engineering from Lafayette College of Easton in Philadelphia. He earned a master of science degree in electrical engineering and a doctorate in bio-engineering from Polytechnic Institute in Brooklyn.

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RELEASE NO. 81-9

LANGLEY HOSTING REVIEW OF NASA'S LARGE SPACE ANTENNA PROGRAM

Hampton, Va. -- Representatives from industry and six NASA centers gather at NASA's Langley Research Center this week to review the latest technological advances in the agency's large space antenna program.

Demonstration models of various antenna concepts are tentatively scheduled to be flight-tested aboard the Space Shuttle in the mid-1980's. The Shuttle is expected to make large space antennas feasible by transporting them into space, folded in the Orbiter cargo bay, and deploying them into Earth orbit. Missions could range from communications and other Earth-oriented applications to more purely scientific studies of the solar system and the universe.

Objectives of the review, being held through Friday, include identifying additional work necessary on antenna system technology concepts, identifying the need for ground test techniques and facilities, and formulating technical plans and resources required to complete the technology development for these concepts.

Technology developments have concentrated primarily on the structural and material aspects of each antenna concept. Proposed total system developments will be presented by NASA program managers and their commercial contractors.

The review is taking place in Building 1192-C, Room 124.

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February 9, 1981

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RELEASE NO. 81-10

RAPER CHOSEN FOR SENIOR EXECUTIVE FELLOWSHIP

Hampton, Va. -- Harvard University will have a Langley Research Center manager on campus for the next several months as NASA's representative in the Program for Senior Executive Fellows.

James L. Raper, Assistant Head of the Experiment Analysis Branch, Atmospheric Environmental Sciences Division, won NASA's endorsement to participate in the executive education program of the John F. Kennedy School of Government, following an agency wide competition. He began the 13-week public management course Feb. 7.

The Program for Senior Executive Fellows, developed by Harvard after the passage of the Civil Service Reform Act of 1978 and its creation of the Senior Executive Service, is an intensive course for those in the federal government who are preparing for, or have recently assumed, positions of significant managerial responsibility. It was first offered in September 1980.

The program is offered to help meet the federal government's need for a corps of top career managers, highly trained and motivated, with broad experience in the implementation of government policies and programs. It is especially designed to build management skills among members of the career service, which is responsible for programs extending through successive generations of agency and national leadership.

- more -

February 13, 1981

Raper joined the Langley staff in 1959 as an engineer conducting research in configuration aerodynamics. He was a member of the Project Mercury Beach Abort Team from 1959 to 1960, Manager of Project RAM Vehicle from 1964 to 1966 and worked on the Apollo heat shield from 1964 to 1966. He was named Assistant Manager of the Reentry F Project in 1966 and Manager of the Viking Deceleration Project in 1969, responsible for testing and qualifying the Lander parachute system. He was appointed Manager of Advanced Mission Studies in 1973.

He served a one-year special assignment at NASA Headquarters in Washington, D.C., as Assistant Chief of Environmental Quality Programs from 1977 to 1978.

In 1978 Raper returned to Langley as Assistant Head of the Experiment Analysis Branch, where he assists in directing and managing the Earth Radiation Budget Experiment, which will be on three satellites from late 1983 through early 1987, and he directs the Langley Climate Research Program.

Raper received a bachelor of science degree in mechanical engineering from North Carolina State University, graduating with honors in 1959, and a master of science degree in administration from George Washington University in 1970. He and his wife, Betsy, live in Newport News, Va. They have a son and a daughter.

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RELEASE NO. 81-11

CAREER DAY SCHEDULED AT NASA'S LANGLEY RESEARCH CENTER

Hampton, Va.--Peninsula high school seniors will converge on NASA's Langley Research Center in Hampton, Va., Feb. 24 to take part in the seventh annual "Career Day," held in association with National Engineers Week.

The purpose of the week is to acquaint the public with the work of engineers and to honor outstanding members of the profession.

Approximately 480 seniors who are interested in engineering will take part in the 9 a.m. to 2 p.m. program designed to expose students to different engineering fields.

The program will open with comments by NASA-Langley Director Donald P. Hearsh, followed by a panel discussion on cooperative education by engineering co-op students from NASA and the Newport News Shipbuilding and Dry Dock Co.; a tour of several research facilities at Langley; and individual meetings with representatives from area engineering societies.

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February 18, 1981

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Feb 23

Maurice Parker
(804) 827-2934

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February 23, 1981

RELEASE NO. 81-12

NASA SELECTS EQUIPMENT CONTRACTOR

Engineering Incorporated, 41 Research Drive, Hampton, Va., has been selected by NASA's Langley Research Center for negotiation of a contract to design and fabricate research equipment in support of Langley's staff.

The cost-plus-fixed-fee contract will cover a period of three years, beginning about March 1, with a two-year unpriced option. The value of the contract work is approximately \$3.18 million.

The work will include design of machinery elements; mechanical structures; heat transfer devices; and fluid, mechanical and electrical systems for specialized research equipment. All work, including fabrication and assembly, will be done at the contractor's facility or at NASA-Langley.

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NASA News

File 26

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RELEASE NO. 81-13

NASA-LANGLEY MAKES AWARD TO SMALL BUSINESS FIRM

Hampton, Va.--A.A. Builders of Virginia Inc. of Hampton, Va., has been awarded a contract for the rehabilitation of two NASA-Langley Research Center facilities.

The \$365,000 contract was awarded under Section 8(a) of the Small Business Act of 1953 to renovate the Data Reduction Center and the Flight Control Research Laboratory.

Section 8(a) authorizes the Small Business Administration (SBA) to enter procurement contracts with federal agencies and, in turn, to subcontract the work to small businesses. The program emphasizes providing subcontracts to businesses owned by socially or economically disadvantaged persons.

Langley pioneered the Section 8(a) program within NASA by being the first NASA center to enter an agreement with SBA, which was signed in June 1970.

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February 26, 1981

Since award of the first small business contract, NASA has awarded contracts in excess of \$237 million under the program. Of this amount, Langley awards total more than \$21 million.

The cooperative government program was established in response to a request by the President that federal agencies assist qualified minority firms in achieving productive and economic stability in a competitive business environment.

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RELEASE NO. 81-14

WATSON TO LECTURE AT COLISEUM

Hampton, Va.--Recombinant-DNA is the creation of new forms of life by the genetic engineering cloning process. The impact of this technology may lead to serums, vaccines and hormones to successfully fight diseases ranging from cancer and hepatitis to the common cold, according to the Nobel Prize-winning biologist, Dr. James D. Watson.

Watson, Director of the Cold Spring Harbor Laboratory in New York, will discuss "Recombinant-DNA, The Insurance for Man's Future," at the "Our Future in the Cosmos" public lecture series Monday, March 16, at 8 p.m. in the Hampton Coliseum.

The public lecture series is sponsored by NASA and the College of William and Mary. Free tickets are available at the Coliseum box office.

In his lecture, Watson will emphasize the development of vaccines and the potential for curing inherited diseases, such as sickle-cell anemia and hemophilia.

--more--

March 10, 1981

Watson thinks the Recombinant-DNA techniques will help identify all of the 100,000 human genes. He said the techniques may also be used to develop protein to help alleviate food shortages and increase the yield of alcohol from corn to energy, and bacteria for consumption of oil spills and extraction of scarce, valuable minerals from the soil.

Watson and two other scientists won the 1962 Nobel Prize in medicine for their work in understanding DNA, the substance of genes. He has held positions at the University of Copenhagen, the University of Cambridge, the California Institute of Technology and Harvard University. He is the author of the book, "The Double Helix," which led to his discovery of the double helix structure of the DNA molecule.

NOTE TO EDITORS: Dr. James D. Watson will give the same lecture at a Langley colloquium Monday afternoon in the Activities Center, Building 1222. A news briefing will be held at 1:15 p.m., and the lecture will begin at 2 p.m.

--end--

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March 11

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RELEASE NO. 81-16

LEE TO HEAD EQUAL OPPORTUNITY PROGRAMS OFFICE AT NASA-LANGLEY

Hampton, Va.--Robert B. Lee III has been selected to head the Office of Equal Opportunity Programs at NASA's Langley Research Center in Hampton, Va.

He is former manager of the Limb Infrared Monitor of the Stratosphere/Nimbus 7 Satellite Correlative Measurements Program, responsible for conducting studies to assess the performance of air pollution measurement instruments, proposed for use by the Environmental Protection Agency, National Oceanic and Atmospheric Administration and state environmental quality regulatory agencies. Since last October he has also been involved in the development of the Correlative Measurements Program for the HALOE Space Shuttle experiment.

As head of the Office of Equal Opportunity Programs, Lee is responsible for monitoring and coordinating the center's Equal Opportunity Programs, including the Affirmative Action Plan, Hispanic Employment Program and Federal Women's Program, and administering the Discrimination Complaints System.

--more--

March 11, 1981

Lee began his NASA career in 1964 as a cooperative training student. In 1966 he joined Langley's professional staff, conducting research in material science and space optics. From 1971 to 1974 he was project manager for a stratospheric ozone determination program using photometry of eclipsing satellites. In 1974 he was named data acquisition manager for the Dual Air Density Explorer Satellites Project and was an analyst for the West German ESRO IV Satellite Program.

From 1976 to 1977, Lee was in the NASA Career Development Program assigned to NASA Headquarters in Washington, D.C., as the technical administrative assistant to the Director for Weather, Climate and Environmental Quality Programs in the Office of Applications.

Born in Norfolk, Va., Lee graduated from Booker T. Washington High School, where he received numerous awards in math and was a member of the National Honor Society. He received a bachelor of science degree in physics from Norfolk State College in 1966 and a master of science degree in engineering physics from the University of Virginia in 1972. He attended George Washington University and Old Dominion University for advanced studies in atmospheric science and physics.

He has been a visiting professor in physics at Hampton Institute, Hampton, Va.; Claflin University, Orangeburg, S.C.; and Lincoln University, Langston, Okla.

He is a member of the National Technical Association, Toastmasters International, Beta Kappa Chi scientific honor society, Norfolk State University Alumni Association, Omega Psi Phi and NAACP.

The author or co-author of 13 technical papers, Lee was selected as an Outstanding Young Man of America in 1972 and 1974 and was named to Personalities of the South in 1974.

He is listed in the 1966 edition of Who's Who in American Colleges and Universities. He has received the National Urban League Achievement Award under the Black Executive Exchange Program and a Langley Special Achievement Award.

Lee, his wife, Margaret, and their four children, live in Hampton.

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Mar 17-19

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RELEASE NO. 81-17

NASA-LANGLEY TO HOST SHUTTLE COMPETITION

Hampton, Va.--Twenty high school students from Virginia and surrounding states will meet March 17 through 19 at NASA's Langley Research Center in Hampton, Va., to learn who will have the opportunity to have their experiments fly aboard the Space Shuttle.

The competition is part of the national Space Shuttle Student Involvement Project, a joint effort of NASA and the National Science Teachers Association.

The objective of the project is to stimulate the study of science and technology in grades 9 through 12 by engaging students in a competition to develop payload experiments suitable for flight aboard the Space Shuttle.

The students, from Virginia, North Carolina, South Carolina, West Virginia, Maryland and Washington, D.C., are among 200 semifinalists from across the country competing to have their experiments placed on the Shuttle. The experiments encompass a wide range of disciplines, including biology, chemistry, astronomy and physics.

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March 11, 1981

About 1,500 entries for the competition were received by the Association. These proposals were grouped into 10 geographic areas or regions determined by the Association. The students who will meet at NASA-Langley are from region three.

Interdisciplinary teams of teachers, scientists and engineers selected by the Association, reviewed the proposals at the 10 regional levels and selected 20 entries from each region for the semifinal competition.

According to Hal Mehrens, head of NASA-Langley's Office of Education and Community Services, each student during the semifinals will be required to present his experiment proposal to a panel of judges.

The judges will evaluate the proposals and consult with the students on each proposal. The students may then refine their proposals and resubmit them. The judges will then, based on the resubmitted proposals, select the winners.

The winning projects will be chosen on the basis of scientific and engineering merit. The winners and their teachers will attend a special educational conference at NASA's Kennedy Space Center in Florida late this summer.

Winning student experiments will be assigned to specific Shuttle flights as the experiments are ready, as Shuttle payload space is available and as future Shuttle flights are confirmed.

A second Space Shuttle Student Involvement Project contest will open in September, with a series of regional conferences planned for March 1982. Selection of new groups of student winners will be made in May 1982.

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March 19
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March 24

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RELEASE NO. 19

LANGLEY RESEARCH CENTER HONORS INVENTORS

Hampton, Va.--Sixteen Langley Research Center inventors were honored for receiving United States patents in 1980 at the annual Inventors' Luncheon Thursday, March 19.

Awards were presented by Dr. Donald P. Heath, Langley Director. Guest speaker for the luncheon was Floyd I. Roberson, Director of the Technology Transfer Division at NASA Headquarters in Washington, D.C.

This is the first time a woman has been the sole inventor of a contribution for which a patent has been issued. Carmen E. Batten was presented an award for a visible and infrared polarization ratio spectrophotometer.

In addition to receiving an award for a retainer for murine specimens and test equipment, Roland W. Lee was presented the Langley Technology Utilization Award. The citation accompanying the award read, "For outstanding accomplishments in a number of biomedical applications projects, which have resulted in significant transfers of NASA technology and expertise and substantial benefits to the public, thereby, reflecting considerable credit to NASA."

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March 24, 1981

Other inventors receiving awards were Randolph F. Culotta and Donald L. Posey, for a static pressure orifice system testing method and apparatus; Maynard C. Sanford and David L. Gray, for a solar cell angular position transducer; Wilford E. Sivertson, Jr., for a radar target for remotely sensing hydrological phenomena;

William R. Hood, for detection of the transitional layer between laminar and turbulent flow areas on a wing surface; Emmett L. Bryant, for a noncontacting method for measuring angular deflection; David C. Grana and Richard T. Wilem, for a natural turbulence electrical power generator; Ronald N. Jensen, for a combined solar collector and energy storage system; Dr. Joseph S. Heyman, for a CDS solid state phase insensitive ultrasonic transducer;

William M. Kahlbaum, Jr., for a chromatically corrected virtual image visual display; Dr. Wolf Elber, for a partial interlaminar separation system for composites; and Bobby L. Berrier, for a thrust augmented spin recovery device.

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RELEASE NO. 81-20

STRUHAR NEW FINANCIAL MANAGEMENT DIVISION CHIEF AT NASA-LANGLEY

Hampton, Va.--Joseph R. Struhar is the new Chief of the Financial Management Division at NASA's Langley Research Center in Hampton, Va. He replaces Edward A. Howe, who retired last December.

Former Assistant Chief of that organization, Struhar will be responsible for all areas of finance and accounting except budget preparation and control.

Struhar began his Langley career in August 1960 as a staff accountant. In February 1965 he was named Head of the Appropriation Accounting Section. He became Assistant Head of the Accounting Branch in June 1966 and branch Head in April 1970. In March 1973 he was selected Assistant Chief of the division.

He served in the U.S. Army from 1961 to 1963.

Born in Pittsburgh, Pa., Struhar graduated from North Catholic High School in 1956. He received bachelor and master of science degrees in business administration from Duquesne University in 1960 and the College of William and Mary in 1973, respectively.

Struhar is a member and Past President of the Federal Government Accountants Association.

He, his wife, Catherine, and their two sons live in Hampton, Va.

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March 25, 1981

NASA News

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RELEASE NO. 81-21

ADAMS CHOSEN PRD ASSISTANT CHIEF AT NASA-LANGLEY

Hampton, Va.--Dr. Belinda H. Adams has been named Assistant Chief of the Programs and Resources Division at NASA's Langley Research Center in Hampton, Va. She is former Head of the Institutional Programs Branch of that organization.

Adams will assist the chief of the division that is responsible for helping center management plan and implement research and development programs and supporting requirements through analysis of present and proposed programs to provide resources, such as money, manpower and facilities; preparation of budgets and program operating plans; monitoring the budget process; and supporting Langley divisions in resource policy and procedure.

Adams joined the Langley staff as an aerospace technologist in the Analysis and Computation Division in July 1963. From November 1970 to August 1973 she was an operations research analyst, working first in PRD and then in the Business Data Systems Division. While assigned there, she was responsible for planning and coordinating the training program for a new generation of computers. She became Assistant Head of the Institutional Programs Branch in August 1973 and branch Head in April 1975.

She was an assistant professorial lecturer at the George Washington University's Tidewater Center from 1970 to 1976.

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March 25, 1981

A native of Mississippi, Adams received an associate degree from Hinds Junior College, graduating with honors in 1961, and a bachelor of science degree in mathematics from the University of Mississippi in 1963. She received a doctorate in business administration with a specialty in quantitative methods from the University of North Carolina in 1972.

The author or co-author of four technical papers, Adams is a charter member and Past President of the Peninsula Chapter of the Society for Advancement of Management. She has received a Special Achievement Award and a Group Achievement Award, and in 1977 was NASA's nominee for the William A. Jump Memorial Award for distinguished career service in public administration. She served on the Center Task Team supporting a NASA Task Force of Performance Appraisal and Merit Pay, for which NASA received the first Udall/Derwinski Award for excellence in Civil Service reform implementation.

Adam, her husband, William M. Adams, Jr., and their two daughters, live in Yorktown, Va.

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RELEASE NO. 81-22

DOWLING HANGS UP HIS GUARD HAT

Hampton, Va.--As a NACA plant protection man, a NASA security assistant and a contractor security guard, Wallace J. Dowling has devoted 31 years of his life to NASA's Langley Research Center, keeping a watchful eye on the center.

On Tuesday, March 31, Dowling will hang up his guard hat and retire at the age of 80.

Dowling came to Langley in 1950 as a plant protection man assigned to the Security Office, working for Edward B. Boswell. "Back in those days, guards were civil service employees," Dowling explained. "There were only three of us responsible for the entire installation, for both security and fire protection. Two of us covered the West side and one covered the East."

The guard force increased in size as the center grew, and in 1961 plant protection was placed under contract with the M&T Company. Dowling was the only guard to stay on at Langley; the others either retired or found other employment. "At that time I continued to work in the Security Office as a security assistant," Dowling said. "My job was seeing that the contract guard force had their assignments. If anything special came up that the guards had to check on

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March 25, 1981

or look for, I explained that to them."

Dowling said he enjoyed the 10 years he worked as a security assistant because he worked more closely with center employees. "I had a pass to go anywhere on the field and could keep in touch with what was going on. I always checked out the security violations, such as leaving safes unlocked or classified material on desks, that were reported to the office by the guards. It seemed like every day somebody had a violation that had to be checked. I performed badge checks regularly to make sure employees were wearing their badges," he said.

In 1971 Dowling retired from NASA at the age of 71. He immediately went to work for Industrial Maintenance Services, Inc., as a contractor security guard. He worked at the old Gate 5 for more than seven years and has been stationed at the new Gate 5 for about two years. He has also filled in at Gate 4 whenever needed. "I worked at the Visitor Center too, for a year 'guarding the moon rock,'" he laughed. "That really was my main duty then. I also had to keep my eyes open all the time to make sure kids didn't put stuff in their pockets."

Dowling has seen many changes at Langley during his 31 years here. "It seems to me that Langley was more self-sufficient in the 1950s. Langley had good facilities, such as carpenter shops and machines shops, where all the work was done by the employees. There was also an excellent maintenance staff here and really good technicians in all branches. As the technicians retired, it seems many were replaced by contractors. Everything now is definitely more contract oriented. There are more facilities now and, with the complement cutbacks, I guess more work had to go under contract."

One of the most exciting times Dowling remembers was during the days when the first seven astronauts were assigned to Langley. "The days the astronauts were training here and the first spaceflight were exciting times for Langley. After all, this center was where a great deal of the research took place. It

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was during those days that history was made. The ones of us that were here then will always remember those special events.

"While the astronauts were in training, their offices were in the East area. They kept their research equipment and space suits there and we had to make sure those items were secure. I knew all seven of those guys. They were all nice guys, everyone of them."

Dowling said his career has been a good one--one he said he will miss. "Thirty-one years of my life have been spent here. You never forget old acquaintances and the people you work with. You're always thinking back about the good times you've had. There weren't many bad times, either."

How much time will Dowling spend out here in the future? "Not much," he said. "I plan to spend a lot of time with my wife and we plan to travel."

As Dowling retires from Metropolitan Security Service, he leaves this message with his friends:

"I would like to say that my associates at Langley have been the finest people anyone could ever hope to work with and my comrades of the guards force are equally as fine."

Your comrades of the guard force think you are fine, too, Wallace J. Dowling. Major Winfred L. Jones, the contract manager, has this to say to you:

"In recognition of your 31 years of faithful and dedicated service as a federal and contractor guard at Langley, I would like to take this opportunity to commend you on your outstanding performance as a guard, instructor and adviser. During this long period of time, your fellow guards have been most impressed by your positive attitude, professional ability, personal appearance and behavior, which set an example for all to follow. Your expert suggestions and recommendations have been a decisive factor in formulating the professional guard force we have

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today. Your personal accomplishment, enthusiasm and exceptional devotion to duty will always be remembered.

"The expressions stated here are the sole expressions of your fellow guards... It is their way of saying you are Number 1.

"Captain Depue, the entire guard force and I extend our sincere appreciation for a job 'superbly well done'. We wish you and your family the best of health and happiness and wish you well in all your endeavors."

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RELEASE NO. 81-24

NOTICE TO EDITORS

A thorough investigation of the January accident in a wind tunnel at NASA's Langley Research Center has been completed, and a comprehensive report has been approved by Langley management and by NASA Headquarters in Washington, D.C.

A summary of that report, including the findings of the investigation committee, is attached. A copy of the full report is available at the NASA-Langley Public Affairs Office. If you wish to view the full report, contact the Public Affairs Office at 827-2934.

Maurice Parker

Maurice Parker
Public Affairs Officer

April 3, 1981

SUMMARY OF INVESTIGATION
CONCERNING AN ACCIDENT IN THE
4-BY-7-METER LOW-SPEED WIND TUNNEL
AT THE NASA-LANGLEY RESEARCH CENTER

An accident occurred in the 4-by-7-Meter Low-Speed Wind Tunnel, located in Building 1212 at NASA's Langley Research Center, at approximately 9:30 a.m. Monday, January 5, 1981, during the installation of a strut in the test section of the tunnel. The installation was being done by five riggers employed by the Klate Holt Company, a Langley support contractor.

The strut, an 8,450-pound apparatus used to support wind tunnel models, was being installed with the use of an "A-frame" (a mobile, telescoping gantry crane) and a chain fall (a pulley and chain lifting device attached to the A-frame). The installation was being observed by two NASA employees, Dale W. Dalin, a supervisory technician, and Robert F. Schwartz, a unit leader.

The strut was located on the ground floor of the tunnel building, just beneath the second floor tunnel test section. The A-frame was located on the floor of the test section, with the chain fall running between the A-frame and the strut through a slot in the steel tunnel floor.

During the operation, the strut was placed in an unstable position as it was being raised from a horizontal to a vertical attitude. The strut toppled over, thereby causing the A-frame to fall. The A-frame struck one of the Klate Holt riggers a glancing blow as it fell, then fell on and pinned Dalin to the floor. Injuries to Dalin resulted in his death on January 7, 1981.

Immediately after the accident, calls were made for medical assistance. An ambulance from the NASA fire station arrived first at the scene, followed shortly thereafter by a doctor from the NASA-Langley dispensary and by Hampton Fire Department paramedics. Dalin was rushed to Hampton General Hospital where, despite extensive medical treatment and surgery, he died.

A three-person investigation committee, composed of Langley employees not connected with the tunnel operation, was formed the day of the accident. After Dalin's death, the committee was expanded to five members.

During the investigation, all witnesses to the accident were interviewed, the accident scene was extensively photographed, and all equipment and the tunnel test section were thoroughly examined for evidence of how the accident happened. A one-twelfth dynamically scaled model of the A-frame, the chain fall and the strut was built and used in tests, and a simulated repetition of the accident was also conducted.

An inherent instability of the strut and the A-frame combination was verified by engineering analysis and demonstrated by the model simulation. The investigation determined that the use of lateral restraint while lifting the strut would have prevented the accident.

After determining the cause of the accident and making findings of fact, the investigation committee then made specific recommendations concerning three separate aspects of safety:

1. Future installation of the strut.
2. Safe rigging practices.
3. Emergency medical response procedures.

Langley management has carefully reviewed the committee recommendations and is implementing all of them to make certain that such an accident will not recur.

The accident caused the first on-the-job fatality of a Langley civil service employee since 1959, when a research pilot was killed in an aircraft accident.

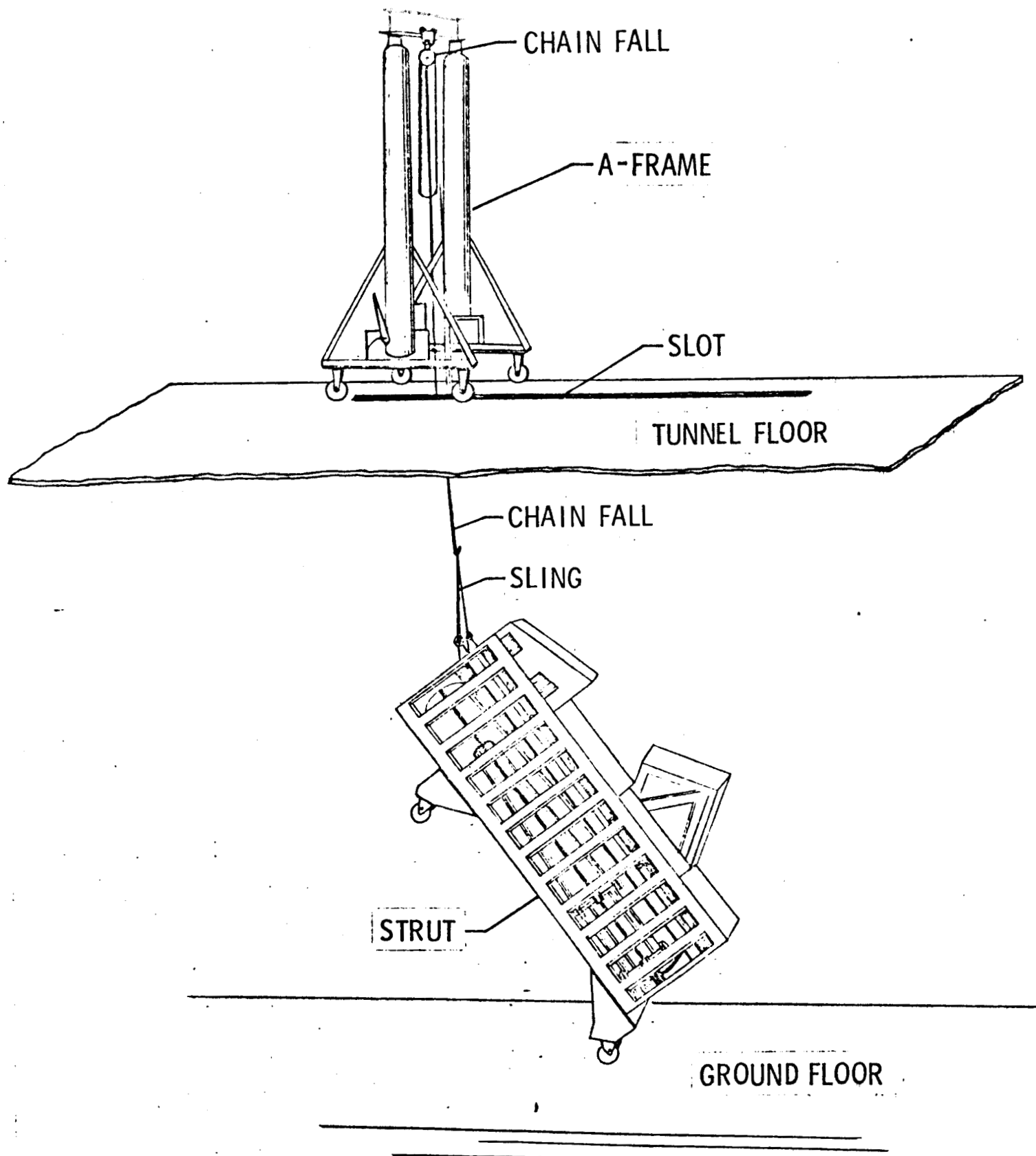


Illustration of how the A-frame was used to lift the strut.

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RELEASE NO. 81-25

NOTICE TO EDITORS

NASA's first Space Shuttle launch is now scheduled for Friday, April 10, at approximately 6:48 a.m.

To help area news people cover the mission, the NASA-Langley Research Center will have a news center in operation from Tuesday, April 7, through the end of the mission on Sunday, April 12.

For your information:

- The Langley news center will be located in the Hampton Room of the Langley Activities Center. It will be staffed by Public Affairs people during all major mission events.

- NASA's closed circuit television system will be brought into the news center. All news briefing from NASA's Kennedy, Johnson and Dryden field centers will be telecast. (See attached schedule of briefings.)

--more--

April 3, 1981

- Television of the final launch countdown will begin at 2:15 a.m. on April 10. Other televised events are planned during the mission, and the landing is scheduled for about 1:15 p.m. on April 12 at the Dryden Flight Research Center. (See attached Mission Events schedule.)

- All air-to-ground audio communications between the Shuttle crew and the Mission Control Center at the Johnson Space Center will be broadcast.

- Television monitors, a separate audio outlet, work tables, telephones, and typewriters will be available for the use of news people. A supply of Shuttle background information, including press kits, still photographs and video tapes will be on hand.

- Television and radio reporters will be able to plug directly into TV monitors to record video and audio of mission events.

- Langley researchers who are generally familiar with the Shuttle program--and Langley's support of it--can be made available for interviews, on a few hours' notice.

- The Langley cafeteria will be open for breakfast Friday, April 10, from 6:15 to 8:30 a.m., and for lunch from 11 a.m. to 1:30 p.m. The cafeteria will not be open April 11 or 12.

- Recorded Shuttle status reports are available by calling 827-2111. The reports will be updated as often as necessary.

- The news center telephone numbers are 827-4687 and 827-2739.

For more information, call the Langley Public Affairs Office, 827-2934.

Jean Drummond, for
Maurice Parker
Public Affairs Officer

SPACE SHUTTLE STS-1
BRIEFINGS SCHEDULE

Launch minus 3 days

*9:30 am	KSC	Space Science Overview (including Space Telescope & Galileo missions)
1:30 pm	KSC	Space Applications & Materials Engineering

Launch minus 2 days

9:00 am	KSC	Space Transportation System Operations
10:30 am	KSC	Orbiter Experiments Package
1:00 pm	KSC	Spacelab
2:00 pm	KSC	Spacelab Science & Mission Management

NOTE: Shuttle crew will arrive at KSC sometime during the day, but no briefing is planned.

Launch minus 1 day

10:00 am	KSC	open (possible briefing on abort contingencies)
1:30 pm	KSC	Pre-Launch Briefing

Launch Day

Launch plus 1 hour (approx)	KSC	Launch Director's Post-Launch Briefing
10 or 11 am	JSC	First Change-of-Shift Briefing (others will follow about 8 hours apart throughout mission, if needed)

Launch plus 1 day

10:30 am	DRFC	Pre-Landing Briefing
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Landing Day

2:45 pm (approx)	DRFC	Crew statements after leaving Orbiter
4:15 pm (approx)	DRFC	Post-Landing Briefing

Landing plus 3 to 7 days

?	JSC	Crew News Conference
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* all times are Eastern Standard

March 31, 1981
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SPACE SHUTTLE STS-1
MAJOR MISSION EVENTS

Friday, April 10

	MET*	EST	EVENT
DAY	HR:MN:SC		
0	00:00:00	6:48 am	LIFTOFF
	00:02:12	6:50	SRB Sep (Solid Rocket Booster Separation)
	00:08:32	6:56	MECO (Main Engine Cutoff)
	00:08:50	6:56	ET Sep (External Tank Separation)
	00:10:32	6:58	OMS-1 (Orbital Maneuvering System 1st Ignition-- 76 seconds)
	00:44:00	7:32	OMS-2 Ignition (88 seconds)
	01:20	8:08	Payload Bay Latch/Door Test
	01:36	8:24	TV - Payload Bay Test (20 minutes)
	04:00	10:48	Activate Orbiter Systems
	05:00	11:48	Mid-day Meal
	06:20:41	12:08 pm	OMS-3 Ignition (40 seconds)
	07:05:31	1:53	OMS-4 Ignition (40 seconds)
	07:30	2:18	FCS C/O (Flight Control System Checkout)
	09:05	3:53	Activate Cabin TV
	09:20	4:08	TV - Flight Status Report
	09:50	4:38	Evening Meal
	13:00	7:48	Begin Sleep Period (8 hours)

Saturday, April 11

0	20:50	3:38 am	End Sleep Period
	22:20	5:08	RCS-1 Ign (Reaction Control System 1st Ignition)
	22:45	5:33	Morning Meal
1	00:00	6:48	TV - Flight Control System Checkout
	02:22	9:10	RCS-2 Ignition
	03:02	9:50	TV - Meal Preparation
	03:05	9:53	RCS-3 Ignition
	05:00	11:48	Mid-day Meal
	06:45	1:33 pm	Practice Donning Emergency Ejection Suits
	09:40	4:28	Evening Meal
	10:45	5:33	TV - Carbon Dioxide Absorber Replacement
	13:00	7:48	Begin Sleep Period (8 hours)

Sunday, April 12

1	20:50	3:38 am	End Sleep Period
	22:25	5:13	Morning Meal
	23:55	6:43	Flight Control System Checkout
2	01:25	8:13	Don Emergency Ejection Suits
	01:31	8:19	TV - MCC (Mission Control Center) remotely operates Payload Bay TV
	02:32	9:20	TV - Close Payload Bay Door
	05:27:52	12:16 pm	DOI (De-Orbit Ignition-155 seconds)
	05:56:02	12:44	EI (Entry Interface-400,000 feet)
	06:10	12:58	Computer Controlled Glide Phase
	06:27:43	1:15 pm	LANDING

*Mission Elapsed Time (unlike Apollo & Skylab missions, time reverts to zero each 24 hours)

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Handwritten: 1/14/81

Keith Koehler
(804) 827-2934

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RELEASE NO. 81-27

MINOR EXPLOSION IN NASA-LANGLEY RESEARCH FACILITY

Hampton, Va.--An explosion occurred at approximately 2 p.m. April 6 in a hypersonic propulsion test cell at NASA's Langley Research Center. There were no injuries.

The explosion, in the Hypersonic Propulsion Lab Combustion and Mixing Research Apparatus Test Cell Number One, occurred when gaseous hydrogen was inadvertently introduced into the cell, according to Walt Hoggard, head of the Systems Safety, Quality and Reliability Office.

The extent of the damage is unknown, but was contained within the test cell as it was designed to do in this type of occurrence.

A review committee has been established to determine the cause of the incident. A report is expected to be made available in about 30 days.

In accordance with center policy, the building was evacuated when the incident occurred. Normal emergency procedures were implemented and the test cell was purged. The building was reoccupied within an hour after the incident.

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April 7, 1981

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RELEASE NO. 81-28

NASA-LANGLEY PLAYS SHUTTLE ROLE

Hampton, Va.--From its conception the Space Shuttle has undergone many thousands of hours of studies by researchers throughout NASA and the aerospace industry, including researchers at NASA's Langley Research Center in Hampton, Va.

NASA-Langley was involved in basic research through the 1950s and '60s that supplied elements of the technology needed to develop a reusable space vehicle such as the Space Shuttle.

Langley has been directly involved in Shuttle-related activities since the late 1960s. Between 1966 and 1969, Langley awarded contracts to several aerospace companies to examine a wide range of requirements and expected performances for reusable space vehicles.

NASA's then Office of Manned Space Flight awarded four feasibility study contracts for an integrated launch/re-entry vehicle managed by the Langley, Johnson and Marshall centers. During these studies, a NASA-wide Space Shuttle Task Group, which included Langley participants, was organized in NASA Headquarters.

Nine days before Neil Armstrong first stepped onto the Moon, Langley's Space Shuttle Technology Task Group was established and, with similar groups at other

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May 11, 1981

NASA centers, began to gear up for its part in the coming program.

During the early 1970s, Langley continued to contribute to the technology base for reusable space vehicles, developed in-house vehicle designs, and evaluated contractor concepts.

The technology advanced to the stage that in 1972 NASA felt confident to begin development of the world's first reusable space vehicle. Therefore, NASA directed Rockwell International to begin development of the Space Shuttle.

As the Rockwell Shuttle design matured, Langley's efforts were directed toward supporting the development of that design. This support has continued as required throughout the program.

In mid-1979, Shuttle program personnel uncovered potential structural and mechanical design problems with the Shuttle's thermal protection system. Langley Director Donald P. Heath committed Langley researchers to apply their unique expertise and facilities to assist in solving these problems.

Paul Holloway, Langley Director for Space, was given responsibility for coordinating all Langley Shuttle support. As study results evolved, they have been made available to Shuttle program management.

Langley's interest in the Space Shuttle program does not end with the first flight, but will continue through the four evaluation flights and on into the more routine operational flights.

The evaluation flights will provide data with which Langley researchers may verify vehicle performance. The operational flights will provide researchers with a continuing opportunity to use the Shuttle as a flight research vehicle, as well as providing transportation of Langley-developed experiments into space.

Examples of these are the Feature Identification and Location Experiment (FILE) and the Measurement of Air Pollution from Satellites (MAPS) experiments. FILE is concerned with developing technology which may have advanced remote sensing

applications, while MAPS is concerned with evaluating a remote sensing technique. Both are scheduled to be included on the second Shuttle flight.

Scheduled for later Shuttle flights are the Long Duration Exposure Facility (LDEF), a free-flying structure on which more than 40 international experiments will be mounted, and the Earth Radiation Budget Satellite (ERBS).

All three experiments--the Earth Radiation Budget Experiment, the Stratospheric Aerosol and Gas Experiment II and the Halogen Occultation Experiment--aboard the ERBS are managed by NASA Langley. These experiments are concerned with gaining a better understanding of the Earth's atmosphere.

END OF GENERAL RELEASE. Following is a list and short descriptions of Langley experiments and projects that are scheduled to be on future Shuttle flights and projects associated with the Shuttle.

With the launch of the first Space Shuttle, there begins a period of unprecedented and continuing opportunity to obtain research information about the flight performance of a revolutionary-type of spacecraft--the airplane-like, reusable, Shuttle Orbiter. NASA's Office of Aeronautics and Space Technology, through its Orbiter Experiments (OEX) Program, is taking advantage of this opportunity by providing research-dedicated instrumentation to fly onboard the Shuttle Orbiter to record specific, research-quality data. These data will be used to verify the accuracy of wind-tunnel and other ground-base simulations made prior to flight and to assess vehicle flight performance techniques.

Langley Research Center is an active participant in the Orbiter Experiments (OEX) Program managed by the Johnson Space Center (JSC). Immediately following the first Shuttle flight, Langley researchers will be analyzing data jointly with JSC from existing onboard instrumentation to assess the aerodynamic and aerothermal performance of the Orbiter during its first atmospheric entry. In addition, Langley researchers are currently developing specialized instruments to be placed onboard the Orbiter on subsequent flights. The instruments will provide high-accuracy measurements of the environment in which the Orbiter is flying, and the Orbiter's aerodynamic and thermal response to that environment. Synopses of Langley's Orbiter Experiments activities follow.

STS-1 Flight Data Analysis

During the months preceding the first Shuttle flight, Langley researchers were busy preparing to receive and efficiently analyze Orbiter flight data

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from STS-1. The data will come from over 1,000 sensors on-board the Orbiter, which monitored vehicle motions during entry from orbit, and the pressures and temperatures of the Orbiter's protective layer of thermal tiles.

Using these data, and other ground-derived information, the trajectory which the Orbiter followed during its atmospheric entry will be precisely determined; and the aerodynamic characteristics of the vehicle will be determined for all speed regimes (hypersonic, supersonic, transonic, and subsonic). The thermal response of the Orbiter to the extremely high-temperature environment through which it must fly will also be defined.

The analysis of data from the first Shuttle flight will allow verification of the design of the Space Shuttle Orbiter Columbia. More importantly to Langley researchers, it will be the first step in a continuing process of developing the advanced technology required to build space transportation vehicles of the 1990s and beyond with improved performance and lower operating costs than the current Shuttle.

Shuttle Entry Air Data System

The Shuttle Entry Air Data System (SEADS) will provide accurate measurements of the Orbiter vehicle attitude and the atmospheric density throughout entry, from 90 kilometers altitude to landing. This information, in conjunction with information about the dynamic motions of the vehicle during entry, is required to accurately determine the aerodynamic characteristics of the vehicle in flight.

SEADS is a replacement nose cap for the Orbiter. The SEADS nose cap has 14 small holes, distributed about its surface, through which the local air pressure is measured. Vehicle attitude and atmospheric density are determined using these pressure measurements.

Shuttle Upper-Atmosphere Mass Spectrometer

The Shuttle Upper-Atmosphere Mass Spectrometer (SUMS) will compliment the SEADS by providing atmospheric density information at altitudes above 80 kilometers. This information, along with vehicle motion information, will allow determination of Orbiter aerodynamic characteristics in the thin upper-atmosphere, where air molecules move independently instead of as a fluid. This flight environment cannot be simulated in ground facilities.

The SUMS instrument is a mass spectrometer developed for the Viking mission to Mars. This Viking back-up instrument is being specially modified to operate in the flight environment of the Shuttle.

Shuttle Infrared Leaside Temperature Sensing

The Shuttle Infrared Leaside Temperature Sensing (SILTS) experiment will obtain high-resolution infrared images of the upper (leaside) surfaces of the Orbiter fuselage and wings during the entire period of atmospheric entry. These images will be transformed into surface temperature maps which are used to determine the thermal response of the fuselage and wing upper surface to the

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extreme temperatures of atmospheric entry. Comparison of the flight-measured data with wind tunnel results and other ground-derived simulation will provide for improvements in the technology of predicting thermal environments on the leeside of large, lifting vehicles such as the Shuttle Orbiter.

The SILTS experiment will consist of an infrared camera contained within a pod atop the Orbiter vertical tail. The camera will look alternately, through two windows, at the payload bay doors atop the fuselage and the left wing. The pod and the infrared camera system have been fabricated by Langley personnel.

Shuttle Altitude Measuring System

The Shuttle Altitude Measuring System (SAMS) will provide a precise measure of the altitude of the Orbiter above the ground throughout entry. This altitude information will be used in post-flight determination of the precise entry trajectory.

The SAMS instrument is a radar altimeter developed for the Viking mission to Mars. This back-up Viking instrument is being specially modified to operate on-board the Shuttle Orbiter.

Titanium Thermal Protection System

The Titanium Thermal Protection System Experiment is the result of a broad-based technology program, conducted over the past decade, to advance the state-of-the-art in metallic thermal protection systems to the point where they can provide a design alternative for thermal protection systems and concepts for future space transportation systems.

Most recently, technology development has concentrated on a titanium multiwall tile concept, developed by the Langley Research Center. The titanium multiwall concept, which consists of 12x12-inch tiles that are mechanically attached to the primary structure, can withstand temperatures up to 1,000 degrees F. These tiles, formed from alternate layers of flat and dimpled titanium foil sheets, have been shown to be approximately the same weight as the very lightweight, reusable surface insulation now in use on the Shuttle Orbiter. The titanium tile concept has been successfully fabricated and subjected to a series of structural and thermal evaluations, including both static and wind tunnel tests. This OEX experiment represents another important step in the continuing development of highly durable metallic thermal protection systems for future space transportation systems.

NASA-Langley has two experiments scheduled to be included on the second Space Shuttle flight. The Feature Identification and Location Experiment (FILE) and the Measurement of Air Pollution from Satellites (MAPS) experiment are part of the first science, technology, and applications payload scheduled by the Space Transportation System.

Feature Identification and Location Experiment (FILE)

The primary goal of FILE, a technology development experiment, is to test a

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technique for autonomously classifying the Earth terrain into four categories of features: vegetation, bare land, water and snow/ice/clouds.

FILE uses two solid-state cameras which take data at two different wavelengths. Classification is achieved by real-time processing of the radiance ratios of the features at these wavelengths. The FILE technology, after development and testing, may have advanced remote sensing applications.

Measurement of Air Pollution from Satellites (MAPS)

The MAPS experiment is designed to measure carbon monoxide circulation patterns and concentrations in the Earth's troposphere, the region of Earth's atmosphere from the surface to an altitude varying from 12 to 18 kilometers (7.5 to 11 miles). The performance of the MAPS instrument will be evaluated under various temperatures and other environmental conditions encountered during flight.

The core of the MAPS instrument is a gas filter correlation radiometer. Thermal radiation passes up through the atmosphere into the viewport of the downlooking instrument. The measurements are based on the principle that the carbon monoxide uniquely absorbs a portion of the transmitted radiation.

All three experiments on the Earth Radiation Budget Satellite, scheduled for launch from the Space Shuttle in 1984, are managed by Langley.

Earth Radiation Budget Experiment (ERBE)

The objective of the ERBE is to gather the scientifically required radiation budget data and apply these data to better understand climate and determine its predictability. The goal of climate prediction is to help the nation respond more effectively to climate-induced problems by enabling its government to be aware of or anticipate climate fluctuations and their domestic and international impacts.

The primary mission objectives of ERBE are to determine, for a minimum of one year, with two years desirable, the monthly average radiation budget on regional, zonal and global scales and to determine the equator to pole energy transport gradient. ERBE will also attempt to determine the average diurnal variation in the radiation budget on a regional and monthly scale.

Stratospheric Aerosol and Gas Experiment II (SAGE II)

The objective of the SAGE II is to provide stratospheric measurements of aerosols and their optical model for use in computer models used to assess climate change and determine its predictability. A simultaneous measurement of ozone will also be made.

The primary mission objectives of SAGE II are to map vertical profiles of stratospheric aerosols, nitrogen dioxide and ozone globally from 70 degrees south to 70 degrees north latitude and to establish a global data set; determine seasonal variations in stratospheric aerosols (and their optical properties and size distribution), nitrogen dioxide and ozone to define a baseline for investigating the effect of anthropogenic as well as naturally induced changes on climate and environmental quality; and define sources and sinks of aerosols, nitrogen dioxide

and ozone and to observe natural transient phenomena such as volcanic eruptions, tropical upwellings and dust storms.

Halogen Occultation Experiment (HALOE)

The objective of the HALOE mission is to improve our understanding of stratospheric ozone depletion due to chlorine, nitrogen and hydroxyl compound by collecting and analyzing global data on key chemical species. The primary goal of HALOE is to obtain the global data needed to study the effect of anthropogenic sources (i.e. chlorofluoromethanes or "freons") and natural sources of chlorine on the ozone layer.

HALOE will obtain near global scale vertical profile measurements and horizontal maps of stratospheric hydrogen chloride, hydrogen fluoride, nitric oxide and methane using gas filter spectroscopy, and dichlorofluoromethane ozone, water vapor, and pressure using "broadband" spectroscopy over the latitude range of 70 degrees south to 70 degrees north and determine annual variations in the measured species.

Langley has two instruments under consideration for flight on the Upper Atmosphere Research Satellite (UARS) scheduled for launch from the Shuttle in the late 1980s. The two experiments are HALOE, which is described above, and the Advanced Limb Scanner (ALS).

Advanced Limb Scanner (ALS)

The ALS is designed to measure the vertical and horizontal distribution of a number of important trace gases in the upper atmosphere, including ozone, nitrogen dioxide, nitric oxide, nitrous oxide, water vapor, methane, and dichlorofluoromethane as well as temperature. This experiment focuses on the effects nitrogen compounds have on the integrity of the ozone layer.

The feasibility of making the proposed measurements has been demonstrated in prior supporting research. The instrument design and fabrication and its testing methods will draw on experience gained with the Limb Radiance Inversion Radiometer (LRIR), flown on the Nimbus 6 satellite, and the Limb Infrared Monitor of the Stratosphere (LIMS), flown on the Nimbus 7 satellite.

Measurements will be made at high spatial and temporal density for conducting dynamics and transport studies, source and sink studies, studies of diurnal change, and upper atmosphere responses to perturbations, and studies to improve coupled multi-dimensional models.

Two additional experiments planned for Shuttle payloads are the Long Duration Exposure Facility and the semiconduction of material growth in low-g.

Long Duration Exposure Facility (LDEF)

LDEF is a reusable, unmanned, gravity-gradient stabilized, free-flying structure on which many different experiments can be mounted in trays. It provides an easy and economical means for conducting experiments in space.

LDEF, scheduled for flight in 1984, will be placed in Earth orbit by the Shuttle and remain there for an extended period. A subsequent Shuttle flight will retrieve LDEF and return it to Earth so that the experiments can be removed and returned to the experimenters. LDEF experiments can be either passive or active. For passive experiments, data measurements will be made in the laboratory before and after exposure to space conditions. For active experiments, data gathering may require such systems as power and data storage.

LDEF is a structural framework whose cross-section is a 12-sided regular polygon. The primary framework consists of ring frames and longerons fabricated from aluminum extrusions. Trays containing experiments will be mounted into bays formed by the rings and longerons. One of the largest payloads approved for Shuttle flight, LDEF measures 14 feet in diameter and 30 feet in length.

LDEF was conceived 11 years ago as a Meteoroid and Exposure Module. Researchers thought that such a large, passive, inexpensive module exposed in space and returned could reveal more about the near-Earth environment and its effect on spacecraft than all previously flown active (and therefore expensive) meteoroid experiments. Later it was realized that the benefits of the module were not limited to meteoroid experiments. The module then became LDEF and experiment opportunities were announced to researchers in all science and technology disciplines.

The first LDEF will carry 47 experiments. The experiments cover a variety of technical disciplines, including materials and structures, electronics, power and propulsion, space research, astrophysics, lunar and planetary science and life science. The experiment investigators are from government, private industry and university organizations and the European Space Agency. Countries represented by the experiments include Canada, Denmark, France, Ireland, Switzerland, the United Kingdom, the United States and West Germany.

Semiconductor Material Growth in Low-G

The demand for remote sensing devices for pollution monitoring, geological surveying and crop surveillance has increased tremendously in recent years. As the applications have become more sophisticated, the requirements for improved devices have reached a point where one of the factors limiting further device development is the availability of high-quality materials from which they can be fabricated. This is especially true for a class of materials called "narrow-bandgap" semiconductors which are used to construct lasers and detectors in the infrared region of the electromagnetic spectrum. Lead-tin-telluride (PbSnTe) is a material in this class which is being studied at Langley as part of NASA's Materials Processing in Space Program.

The objectives of the research are to address the present limitations in the quality of PbSnTe crystals. In this experiment, crystals will be grown in an identical manner, except for gravity, in space (scheduled on a Shuttle in 1984) and on Earth. The crystals will then undergo a series of comparison studies. The results of these studies will be used to modify growth techniques to improve the quality of crystals grown in the future.

Additional studies which will ultimately exploit the Shuttle payload capability are being performed on large space systems.

Large Space Systems

The Shuttle will provide NASA engineers with the capability to build large structures in space. Technology for large space systems are focused on the design, analysis, fabrication, and testing of structural concepts for space construction. Langley's Structures and Dynamics Division is analyzing and selecting promising concepts in space hardware. Developments in structural joints, high stiffness truss materials, and a variety of ultra-precision control devices have made significant contributions toward the assembly of large space structures.

The first generation of large space systems will include antennas and platforms as large as 100 meters (330 feet) in diameter. Antennas will expand the world communications system, provide efficient monitoring of Earth resources, and extend man's reach into the universe through radio astronomy applications. Large space platforms open the threshold for manned stations, scientific research, and the industrialization of space. The complexity of orbiting facilities represents a major technical challenge, but the benefits to mankind are considered worth the investment cost.

Future missions might include the Solar Power Satellite (SPS) which could assist in meeting the world's electrical demand, the Space Operations Center (SOC) destined to be the first step toward maintaining a continuous manned presence in space, and a space manufacturing base producing impurity-free pharmaceuticals and other useful products too costly or impossible to manufacture on Earth.

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RELEASE NO. 81-31

PETERSEN RECEIVES DISTINGUISHED ALUMNUS AWARD

Hampton, Va.--Richard H. Petersen, Deputy Director of NASA's Langley Research Center, received the Distinguished Engineering Alumnus Award from Purdue University today in a special ceremony at the university.

One of the 11 graduates to be honored, Petersen was presented the award by Purdue President Arthur G. Hansen.

Each year since 1964 the faculties of the engineering schools at Purdue have given the award to Purdue alumni "in recognition of outstanding achievements in professional and related fields of activities."

Petersen graduated from Purdue in 1956 with a bachelor of science degree in aeronautical engineering, with highest distinction. In 1957 he received a master of science degree in aeronautics from the California Institute of Technology.

Deputy Director of Langley since July 1980, Petersen serves as General Manager of the center. He is responsible for directing aeronautical research and technology activities and programs and for institutional management of all facilities and equipment.

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April 24, 1981

Before his assignment to Langley, Petersen was Chief of the Aerodynamics Division at the Ames Research Center in Moffett Field, Calif., where he directed a 200-man team conducting research in aerodynamics and fluid mechanics in seven major wind tunnels.

Petersen worked at Ames for most of his professional career, joining NASA in 1957. His initial work at Ames was in theoretical and experimental aerodynamics, particularly in the supersonic and hypersonic speed ranges. More recently he has directed research programs in aircraft noise, hydrogen-fueled aircraft, and short take-off and landing aircraft, as well as spacecraft studies and budget and facility planning.

He was a Program Analyst temporarily assigned to NASA Headquarters in Washington, D.C., from 1965 to 1966 and a Sloan Executive Fellow at the Stanford Graduate School of Business from 1972 to 1973. From 1973 to 1975 he was a senior research engineer/executive for Nielsen Engineering and Research in Mountain View, Calif.

The author of several technical publications on aeronautical subjects, Petersen is an Associate Fellow of the American Institute of Aeronautics and Astronautics.

Petersen and his wife, Jody, live in Newport News. They have a son and a daughter.

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May 4

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RELEASE NO. 32

FLINN TO SPEAK AT NASA-LANGLEY COLLOQUIUM

Hampton, Va.--Modern research in tectonics and seismology requires measurement of the Earth's crustal deformation and plate movement, but classical ground-based geodetic methods are incapable of providing these measurements to the required accuracy, over the distance scales of interest, according to Dr. Edward A. Flinn, Chief Scientist of the Geodynamics Program at NASA Headquarters in Washington, D.C. Within the past few years several methods of precise positioning have been developed to overcome this problem.

Flinn will discuss these methods at a NASA Langley Research Center colloquium Monday, May 4, in the Activities Center, Building 1222. His lecture, "Space Technology Applied to Geodesy and Geophysics," will begin at 2 p.m. A news briefing will precede the lecture, beginning at 1:15 p.m.

Flinn said research programs have been established in several countries to apply space technology to geodesy and geophysics; the program in the United States is led by NASA and involves four other federal agencies: the U.S. Geological Survey, National Geodetic Survey, National Science Foundation and Defense Mapping Agency.

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April 27, 1981

Mobile laser ranging and very long-baseline microwave interferometry facilities have been developed by NASA, and are being deployed to study crustal deformation by the NASA Crustal Dynamics Project at the Goddard Space Flight Center. The principal objective of these studies is to support the earthquake prediction research program led by USGS.

During the first half of the project, which runs through 1986, observations will be concentrated in western North America; after 1983, measurements will be made in other tectonically active regions of the world.

Mobile facilities are also being built by the Dutch and West Germans, and NASA is cooperating with these scientists, through a commission established by the **International** Association of Geodesy, to build an integrated global program of space geodynamics.

Flinn has worked at NASA Headquarters since 1975, and has been Director of Lunar Programs, and Chief Scientist of Lunar and Planetary Programs and Earth and Ocean Programs. From 1960 to 1974 he was a seismologist with Teledyne Geotech in Alexandria, Va.

Flinn received a bachelor of science degree in geophysics from the Massachusetts Institute of Technology in 1953 and a doctorate in geophysics from the California Institute of Technology in 1960. He was a Fulbright Scholar at the Australian National University from 1958 to 1960.

He is a member of many scientific organizations and received a NASA Medal for Exceptional Scientific Achievement in 1980.

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RELEASE NO. 81-35

NASA-LANGLEY DEVELOPS PROGRAMS TO HELP THE DISABLED

Hampton, Va.--This year has been proclaimed the International Year of Disabled Persons (IYDP) by the United Nations General Assembly. NASA's Langley Research Center joins other federal agencies in developing programs and planning activities to heighten public awareness of the rights, abilities, achievements and needs of disabled persons and to involve them in all aspects of life.

The aim of the General Assembly's resolution is "to encourage the full integration and participation into society of the estimated 450 million people on Earth who suffer from some form of physical or mental impairment."

To support national and international efforts in meeting the needs of the disabled, a Federal Interagency IYDP Committee, formed at the direction of the White House, has established five primary objectives for this year.

- Further the development of a U.S. policy on disability.
- Promote research, demonstration, service delivery, policy and planning activities to improve the quality of life for the disabled.
- Develop an awareness throughout the federal government of the needs of individuals with disabilities.
- Further the development and implementation of programs to educate and inform the public of the rights of disabled persons.

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May 5, 1981

- Foster the implementation of human rights.

NASA strongly supports programs that lead to improving the well-being and quality of life for disabled persons and has appointed the agency's first Handicapped Coordinator, Valerie Stucky, to coordinate all activities relating to IYDP and NASA's Handicapped Program.

Randy Manning, Langley's Handicapped and Disabled Veterans Coordinator, said Langley has set up an advisory committee to invite all handicapped employees to participate in planning and coordinating IYDP activities at the center. "We have a set of goals and objectives that we must achieve and some of the programs are already in effect. We have also surveyed center employees to make sure credit was given to all individuals who are disabled."

Manning said Langley has a direct hiring authority that enables the Personnel Division to hire severely handicapped persons. "The direct hiring authority allows us to by-pass the register to hire the disabled; however, they must be fully qualified for the vacant position." Disabled persons are hired on a 700-hour trial appointment to prove they can perform the duties satisfactorily and to adjust to the work environment.

Other center activities and programs supporting the NASA Handicapped Program and IYDP are:

- In the supervisory training courses at Langley, instructors make sure supervisors are advised of NASA's Handicapped Program. In training disabled employees, training programs are modified to accommodate employee needs.

- In-house awareness activities, such as reasonable accommodations for handicapped conditions, job reassignments and job modifications, have been established. These activities are coordinated with the Peninsula Vocational Rehabilitation Center, which serves as consultant and conducts specialized training of Langley employees.

- A NASA conference, which will include the handicapped coordinators from each NASA center, has been planned to discuss IYDP activities and possible improvements to NASA's Handicapped Program. Manning explained that from the NASA conference, Langley hopes to gain information to set up center symposia and workshops which will deal with the program and IYDP.

- Langley encourages firms with handicapped employees to bid on government contracts.

- Federal law requires buildings to have accommodations for handicapped individuals, such as enlarged entrances, ramps, rest room modifications and lowered water fountains and wash basins.

All modifications or rehabilitations to buildings constructed at Langley in the past five years are complete and the center has begun modifications to older facilities to accommodate the disabled.

- Langley's Public Affairs Office publicizes the accomplishments of disabled employees through news releases to the local news media and the in-house newspaper, the Langley Researcher includes profiles on these employees.

Manning pointed out that for the last three years, Langley has had the NASA-wide selection for the Handicapped Employee of the Year Award. "We have some severely handicapped employees working here and we are doing our best to publicize their accomplishments, meet their needs and involve them in all aspects of life."

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RELEASE NO. 81-36

ANDERSON, PARK AWARDED THOMPSON FELLOWSHIPS

Hampton, Va.--Two Langley Research Center researchers have been selected for the Floyd L. Thompson Fellowship Program for 1981-1982.

Dr. Stephen K. Park, Analysis and Computation Division, will spend one academic year at the Optical Sciences Center of the University of Arizona. Dr. Melvin S. Anderson, Structures and Dynamics Division, will study at the University of Wales' Institute of Science and Technology and the University of Birmingham, England.

The Thompson Fellowship Program was established in 1977 to encourage the development of research potential among the Langley staff. The Fellowship allows researchers who have demonstrated continued growth in research to spend up to 12 months at an educational or research institution. It is named in memory of Dr. Floyd L. Thompson, Langley Director from 1960 to 1968. Thompson joined the Langley staff in 1926, retired in 1968 and was a consultant to the NASA Administrator until January 1973.

Park's research will involve the mathematical and computational modeling of multispectral remote sensing systems for conceptual design studies and performance evaluation and the analysis and classification of multispectral image data.

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May 6, 1981

"My research is really concerned with mathematical and numerical techniques for remote sensing and digital image processing applications," Park explained. "At the Optical Sciences Center I will be working with some individuals who have made significant contributions in these areas. I work closely with several research groups at Langley and I anticipate that the experience I gain and research contacts I establish will benefit our work for years to come."

Park is looking forward to the year as an exciting and refreshing time for him and his family. "The Thompson Fellowship is a unique research opportunity and I am thankful that I was selected as a recipient. I certainly appreciate the efforts of all the people involved in the initiation and continued administration of the program."

Anderson will develop practical, efficient and accurate structural analysis for the very large structures proposed for future space application by taking advantage of their likely geometry, construction methods and other factors that will result from being in the vacuum and weightlessness of space.

Anderson said he will be associating with people who have developed innovative and sophisticated structural analysis methods that Langley has used to great advantage in aircraft structures. "The potential of these approaches for space structures is great," Anderson said, "and I hope this year of relatively uninterrupted research will result in significant advances that will have long term benefits to Langley and NASA in the design of future space structures."

"I am looking forward to the Thompson Fellowship as a unique opportunity and work experience as well as a chance for my family to gain the broadening educational benefits of living in another country. The next year should be one of the highlights of my career."

Park began his NASA career in June 1964 as an aerospace technologist in the Magnetohydrodynamics Branch of the Aero-Physics Division, specializing in applied mathematics and computer science.

Since April 1970 he has been assigned to the Computer Applications Branch of the Analysis and Computation Division.

Born in Washington, D.C., Park received a bachelor of science degree in mathematics from Shippensburg State College in Pennsylvania in 1964. He earned a master of science degree and a doctorate in applied mathematics from North Carolina State University in 1967 and 1969, respectively. From 1968 to 1969, he was a research assistant at the university.

The author or co-author of approximately 35 technical papers, Park is a member of the Society for Industrial and Applied Mathematics. He serves on the adjunct staff at Christopher Newport College and George Washington University and has taught graduate courses at Langley for 10 years.

Park and his wife, Rosa, live in Newport News with their son and daughter.

Anderson joined the Langley staff in June 1952 as an aeronautical research intern. He was named Head of the Aerothermoelasticity Section in 1963; Assistant Head of the High-Temperature Structures Branch in 1970; and Head of the Analytical Methods Section in 1974. He became the Principal Scientist in the Structural Concepts Branch of the Structures and Dynamics Division in 1977. He has specialized in plate and shell buckling, composite structure analysis and structural optimization.

A native of Des Moines, Iowa, Anderson received a bachelor of science degree in civil engineering from Iowa State College in Ames in 1952. He earned a master of science degree in applied mechanics in 1955 and a doctorate in engineering mechanics in 1956, both from Virginia Polytechnic Institute.

The author or co-author of over 70 papers and technical society presentations, Anderson is a member of the American Institute of Aeronautics and Astronautics and the Engineers' Club of the Virginia Peninsula. In 1977 he received a NASA Exceptional Service Medal for his work on the Viking Aeroshell Analysis.

Anderson and his wife, Peggy, and their four children, live in Yorktown.

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RELEASE NO. 81-39

NASA TO STUDY BASIC AQUATIC LIFE FORMS ON NANTUCKET SHOALS

Hampton, Va.--Researchers from NASA and other research organizations in the eastern United States are using remote sensors to conduct experiments focusing on phytoplankton, one of the basic life forms in the aquatic food chain, on Nantucket Shoals, off the Massachusetts coast, through May 15.

Through these experiments, NASA researchers will determine the feasibility of using passive and active remote sensing techniques to verify, calibrate and enlarge satellite scanner imagery for measuring temperature, chlorophyll, suspended solids and light attenuation.

From the data gathered, researchers will also gain a better understanding of the relationships between physical and biological processes controlling plankton distribution and the ecosystem (the ecological community and physical environment) structure on Nantucket Shoals.

The researchers are using instruments aboard six ships and remote sensors aboard four aircraft in the NASA-sponsored research effort investigating the dynamics of phytoplankton patches on the Shoals, according to principal investigator Dr. Wayne Esaias, of NASA's Langley Research Center.

The investigations are focusing on the distribution and abundance of phytoplankton (tiny floating aquatic plants) in relation to various factors, including rates of nutrient supply, growth and vertical mixing.

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May 12, 1981

Also, the National Marine Fisheries Service will conduct studies on zooplankton and fish larvae in this important fish spawning area.

In addition to the plankton studies, researchers from the University of Rhode Island are studying whale activity in the area in relation to physical and biological features.

The thrust of the experiments is using real-time remote sensing techniques to determine the distribution of temperature, chlorophyll, phytoplankton diversity, suspended solids and salinity of surface waters along the coast.

Gathering data through remote sensors aboard aircraft can be useful since large areas can be studied in shorter periods than with present measurements from ships. The ships used in the experiment, stationed at positions along the aircrafts' flight paths, are gathering data which will be used to verify the remote sensing information, and are performing critical physical and biological measurements at depths greater than those seen by the remote sensors.

Working with NASA's Langley Research Center on the project are NASA's Lewis Research Center and Wallops Flight Center, Brookhaven National Laboratory, Woods Hole Oceanographic Institution, State University of New York Bigelow Laboratories and the University of Massachusetts Field Station on Nantucket.

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RELEASE NO. 81-40

NORTH CAROLINA STUDENT WINS SPACE SHUTTLE COMPETITION

Karla R. Hauersperger of Charlotte, N.C., a sophomore at East Mecklenberg High School, is being given the opportunity to have an experiment she developed fly aboard a future Space Shuttle mission.

She is one of 10 high school students selected, through the NASA/National Science Teachers Association Space Shuttle Student Involvement Project, to have their experiments placed on a future Shuttle.

Hauersperger, 16, recently presented her experiment, titled "The Effect of Prolonged Space Travel on Levels of Trivalent Chromium in the Body," at NASA's Langley Research Center in Hampton, Va., during semi-final competition.

The objective of the project is to stimulate the study of science and technology in grades 9 through 12 by engaging students in competition to develop payload experiments suitable for flight aboard the Shuttle.

Upon notification of her selection, Hauersperger said, "I was in a state of shock. I couldn't believe it."

She noted that after the initial shock had turned to pure excitement, she started calling "everybody" about being a winner of the contest.

She said her parents, Mr. and Mrs. Richard C. Hauersperger, "thought it was fantastic. They're really happy for me."

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May 12, 1981

Hauersperger began her experiment as a class project. She said that when she decided to enter in the Space Shuttle contest, "I really didn't think I had a chance. I guess I was wrong."

The winners and their advisers will attend a special educational conference in August at NASA's Kennedy Space Center in Florida. The 10 winners were chosen from among 200 semi-finalists and 1,500 original entries from across the U.S.

A second Space Shuttle Student Involvement Project contest will open in September, with a series of regional conferences planned for March 1982. Selection of new groups of student winners will be made in May 1982.

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National Aeronautics and
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May 21

H. Keith Henry
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For Release:
IMMEDIATE

Release No. 81-41

NOTE TO EDITORS

Following is based on an abstract of a paper entitled "Aircraft Measurements of N_2O Enhancement in Thunderstorm Lightning" by Dr. Joel S. Levine, a senior scientist at NASA's Langley Research Center, Hampton, Va. It will be presented May 26 at a meeting of the American Geophysical Union, Baltimore, Md.

EXPERIMENT CONFIRMS LIGHTNING PRODUCES ENVIRONMENTALLY SIGNIFICANT GAS

HAMPTON, VA -- The term "ACE" means different things to different people, but to Dr. Joel S. Levine of NASA's Langley Research Center, ACE means flying into thunderstorms hoping to get struck by lightning.

Levine does not fly into thunderstorms himself, but his ACE experiment does -- to study the production of environmentally significant gases in lightning. One of those gases is nitrous oxide (N_2O), as reported to the spring meeting of the American Geophysical Union in Baltimore, May 25-29.

Levine's ACE -- or Atmospheric Chemistry Experiment -- is one of several experiments carried into thunderstorm cells aboard the NASA-Langley Storm Hazards Project F-106B aircraft to study the meteorological and electrical environment of thunderstorms.

ACE is part of a continuing NASA program involving laboratory discharge experiments and theoretical coupled hydrodynamic-chemical shockwave calculations to assess the production and chemistry of environmentally significant trace

- more -

May 21, 1981

atmospheric species in lightning.

Nitrous oxide is a significant gas for study because it leads to ozone destruction. It rises from the lower atmosphere, where it is primarily manufactured by microbiological processes in the soil, to the stratosphere, where it is chemically transformed to a gas that works to deplete the Earth's protective ozone layer. At about 15 miles above the surface of the Earth, the highly concentrated ozone layer absorbs lethal solar ultraviolet radiation, thus shielding the Earth.

Lightning is far from being the most abundant source of N_2O , but N_2O produced by lightning is probably transported to the stratosphere very rapidly, due to strong convective motions within thunderstorms.

The ACE package consists of a series of 24 stainless steel collecting bottles that are individually activated on command of the airplane's copilot.

The first samples of air exposed to lightning were obtained during the summer of 1980. These samples were analyzed for their N_2O content, using a gas chromatograph equipped with an electron capture detector. Preliminary analysis indicates that about one-third of the more than 100 thunderstorm samples showed N_2O levels enhanced more than 10 percent above the background level. (The background level of N_2O , based on analysis of samples obtained during clear air flights, was found to be 308 parts per billion (ppb), with a sample variability of less than eight percent.) One thunderstorm air sample had an N_2O level approaching 500 ppb, an enhancement of 60 percent above the background level. These measurements indicate a very non-homogeneous distribution of N_2O within the thundercell.

These results, which constitute the first direct and unambiguous observations of the production of a trace gas by lightning, qualitatively confirm earlier

laboratory measurements and theoretical calculations.

The abstract of Levine's paper is published in EOS, Transactions of the American Geophysical Union, Vol. 62, May 1981.

Working with Levine in the studies and co-authors of the paper are Robert R. Brooke and Edwin F. Shaw of the Bionetics Corporation, Hampton, Va., and William L Chameides of the Georgia Institute of Technology, Atlanta.

- 30 -

(NOTE: NASA-LANGLEY PHOTOGRAPH L-81-2961 IS AVAILABLE TO ACCOMPANY THIS RELEASE.)

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For Release:

Immediately

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RELEASE NO. 81-45

LEONARD RETIRES FROM NASA LANGLEY

Hampton, Va.--Dr. Robert W. Leonard retired from NASA's Langley Research Center May 29 after more than 30 years of government service. He was Manager of the Aircraft Energy Efficiency Program Office.

Since 1976, Leonard has managed three major efforts to develop and stimulate the application to commercial transports of advanced composite structures, advanced aerodynamics and active control, and a system for laminar flow control. These programs have so far paved the way for application of composites to control surface structures in aircraft to be introduced in 1982 and active wing load alleviation on transports already in service.

Leonard began his career with NASA's predecessor agency, the National Advisory Committee for Aeronautics in 1949, conducting research in structural response to transient loads and panel flutter. In 1958 he was named Head of the Elasticity and Plasticity Section and in 1961 Head of the Structural Mechanics Branch. He became Assistant Chief of the Structures Division in 1971 and Associate Chief of Structures and Dynamics Division in 1973, where he helped manage analytical and experimental research and develop the structural analysis methods and computer programs (NASTRAN, IPAD) for spaceflight vehicle design.

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June 11, 1981

He chaired a Structural Design Technology Panel which conducted a large NASA-wide research and development program for the Space Shuttle and chaired or served on numerous other ad hoc groups, including committees to investigate structural problems of the Atlas booster, NASA's nuclear rockets and NASA's Research Advisory Committee for Aircraft Structures.

The author or co-author of over 20 publications, Leonard is an Associate Fellow of the American Institute of Aeronautics and Astronautics, a member of the American Society of Mechanical Engineers and former chairman of the ASME Aviation and Space Division.

Leonard received a bachelor of science degree in naval technology from the University of Minnesota in 1946, a master of science and a doctorate in engineering mechanics from the University of Nebraska and Virginia Polytechnic Institute in 1949 and 1961, respectively.

Leonard and his wife live in Williamsburg.

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RELEASE NO. 81-46

NEW NASA LAB CONTRACTOR SELECTED

Datacom Incorporated, of Fort Walton Beach, Fla., has been selected for negotiation of a contract in support of a new Avionics Integration Research Laboratory (AIRLAB) at NASA's Langley Research Center.

The contract calls for systems design and for furnishing and installing computer and other equipment for the new laboratory.

The fixed price contract will run for a period of three years, and is valued at approximately \$4.6 million.

AIRLAB research will focus on developing and testing proposed avionics systems and technology. Researchers will be able to simulate an entire avionics system for a transport aircraft, using simulators, analytical modeling, experimental hardware and software, and detailed techniques of assessment.

Datacom will provide all services and materials necessary to furnish the electronic equipment and software (computer programs) for AIRLAB, including training and periodic reviews of the operation.

The contract work will be done in two phases: a detailed integration design of the research support and ancillary system; and implementation of the design.

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July 10, 1981

NASA News

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For Release:
July 20, 1981

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RELEASE NO. 81-48

NASA LANGLEY TECHNICIANS GET LARGEST SINGLE SUGGESTION AWARD

Hampton, Va.--The largest single Suggestion Award ever given by NASA's Langley Research Center was recently presented to two engineering technicians in the Fabrication Division.

Robert C. Evans and Joseph F. Powers received the award for designing a modification to the insulating foam blocks for the National Transonic Facility Tunnel, which resulted in a \$72,000 savings to the government. They shared the \$3,232 award, which was presented by Langley Deputy Director Richard H. Petersen during a special ceremony.

The NTF, the nation's newest wind tunnel, will be used for testing models of aircraft in the 600 mph transonic speed range, when completed in mid-1982. The \$85 million tunnel, which has an eight-foot-square test section, will help the United States maintain its leadership in high-performance commercial and military aircraft, as well as develop more fuel-efficient transport aircraft for the future. The test medium will be gaseous nitrogen at minus 320 degrees F., which will enable the use of small models in the wind tunnel to better simulate actual flight conditions.

The NTF Tunnel shell required insulation because of the extremely low cryogenic temperature. After a long study of various types of insulation, foam

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blocks that could be applied to the interior surface with a special adhesive were designed, and the Fabrication Division was given responsibility for the task.

In 1979 Evans and Powers were assigned the job of fabricating the foam blocks. Carl Baab, Chairman of Langley's Incentive Awards Committee and Technical Assistant in the Operations Support Division, said "the boys were deliberately assigned the project because they were so innovative and they would work to get the job done."

They did get the job done, but not without many obstacles in their way. "When the boys started the project," Baab explained, "they found that they needed to map out the whole tunnel because of its surface irregularities and tapered shape, and then to make approximately 150 templates or patterns from which the blocks were to be cut. That would have been a tremendous effort as it takes about four hours to make each template and about 3,700 blocks of insulating foam had to be fabricated and installed.

"They realized the difficulties involved in installing the blocks as designed. The blocks had to interlock and fit between metal clips and "T" rails. The way the blocks were designed, it was almost impossible to install them, especially the last block in a section."

Evans and Powers finally decided there was another method of doing the job, said Baab. "They designed a way to make each tile in two pieces with a tapered wedge in the center. The two smaller blocks could be installed, and by tailoring the wedge in the center, the tiles could be easily adjusted to the welded clips and tunnel surface irregularities, assuring an accurate fit in all areas. Fabricating the tiles in two pieces would also reduce the handling weight by one half.

"They found that they could make a single template for various sections on

the tunnel floor and eliminate the need for scaffolding which would have had to be reassembled for each area as they progressed throughout the tunnel. The need for total mapping of the tunnel interior surface was eliminated, saving a tremendous amount of time and money."

Benefits derived from the suggestion are:

- Eliminated alignment problems with tunnel mounting clips.
- Reduced handling weight by 50 percent.
- Reduced size of tiles allowed entry through any tunnel access opening.
- Eliminated one half of the error in tolerance against tunnel walls.
- Blocks were made on a "production line" instead of individual set up for each segment of the tunnel.
- Reduced the number of templates necessary to fabricate blocks from approximately 152 to 65.
- Facilitated installation of last block in each ring section of the tunnel.
- Reduced scheduled time to complete total insulation task.
- Greatly reduced the installation costs to the NTF Project Office.

Baab and Edgar J. Yarrington, a member of the Incentive Awards Committee from OSD, were assigned to investigate and evaluate the suggestion and to come up with an award figure. "It was quite sizeable and three years in the making," Baab explained. "So many people had a hand in the project that we had to make sure these two boys were the ones who had designed the concept, and that the committee was right in what we were doing. Other employees had designed concepts, like laminated types and tiles split into a number of pieces and shapes, to relieve the foam block problem; however, Powers and Evans' concept predated the others."

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Baab said more than 20 people were interviewed and many meetings were held with project managers and work package managers in making the decision. "Finally we arrived at the fact that these boys had really come up with the idea on their own," Baab concluded.

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RELEASE NO. 81-49

NASA DEVELOPING ENERGY-ABSORBING LIGHT PLANE SUBFLOOR

Hampton, Va.--A promising concept to protect people in light airplane crashes seems so simple one wonders why it wasn't thought of long ago: make the bottom of the fuselage energy-absorbing.

Since the mid-1970s, NASA and the Federal Aviation Administration have been studying the crashworthiness of light planes. In 1977, they began an in-depth look at the energy-absorbing possibilities of the fuselage subfloor.

By redesigning the area between the interior floor and the outer skin of the airplane's belly, researchers at NASA's Langley Research Center hope to reduce the crash forces transmitted to the inside of the plane. Other work is aimed at improving the crashworthiness of passenger seats and restraint systems.

Americans own many lightweight, general aviation airplanes. A NASA/FAA goal is to give people a better chance to walk away from airplane crashes than is now possible. A subfloor strong enough to bear the stresses of flight, yet immediately crush under the force of impact at a predetermined level, may help save lives.

Phase one of a series of tests has just been completed at Langley. Dozens of energy-absorbing subfloor ideas evolved into five concepts. Several copies

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July 20, 1981

of each were fabricated into subfloor sections about one-and-one half meters (four feet) square, the typical width of a civil airplane interior at the floor.

The subfloor sections were first tested in a large machine that slowly compressed them with a force equal to that of an average crash. Other sections were dropped from a height of about three meters (nine feet), simulating the vertical component of an average crash. Each subfloor section had mounted to it the equivalent mass of two seats and their occupants.

The concept of transforming a 15 centimeter (six-inch) subfloor, with stiff longitudinal beams and lateral bulkheads, into a crush zone with collapsible members was proven worthy of further testing.

Theory indicates that a velocity change of about 26 kilometers per hour (16 mph) at 25 G's (forces of gravity) is the maximum energy a six-inch subfloor can absorb. Tests of the subfloor sections have proven that concepts designed by Langley researchers Huey Carden and Robert Hayduk are on the right tract and getting near the maximum amount of energy absorption possible. Carden and Hayduk work at Langley's Impact Dynamics Facility.

"We didn't know if our subfloors would behave the way we wanted them to," reflects Carden, "but all three of the completely new subfloor concepts performed as we hoped and one of the two minimum modification, or 'mini-mod', concepts performed well, too. A mini-mod is an energy-absorbing design that would require a manufacturer to make only relatively simple modifications, while a so-called 'advanced' concept uses a more radical design departure.

"Overall, we're very proud of the experimental subfloor sections we've designed and built. In addition to providing a measure of safety, their weight is comparable to existing subfloors and they have just as much cross-sectional

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stiffness as existing subfloors."

With the help of a well-designed subfloor, further protection is possible through the use of energy-absorbing seats. An airplane seat can absorb even more energy than the subfloor, allowing an occupant several additional vertical inches before coming to rest in a crash. Before the seat and subfloor combination can be totally effective, however, the cabin floor must do its job. A two-inch floor is usually attached to the top of a six-inch subfloor, and seats are attached to the floor.

In many crashes, the force of impact and the occupant's forward momentum will cause the floor to buckle and the seats to rip loose from the floor. In their drop tests, Carden and Hayduk demonstrated that a reinforced floor will not break apart in an average crash when the force of impact is moderated and distributed uniformly through a crushable subfloor. In fact, says Carden, the two-inch floor structure usually sustained such small damage that the subfloor section did not seem damaged. An energy-absorbing seat, anchored to a sturdy floor, can "give" to let the seat ride its occupant down to the floor. Various seat concepts are now being considered at Langley and at the FAA's Civil Air Medical Institute in Oklahoma City.

Meanwhile, two of the more promising subfloor designs are being fabricated for testing in full-scale crashes at Langley's Impact Dynamics Facility. One advanced section and one mini-mod, each measuring almost three meters (nearly nine feet), will be build into the bottom of full-size, twin-engine pressurized airplanes, serving as the subfloor for the passenger area. A third crash test will use a standard subfloor for comparison.

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The advanced concept chosen for this second phase of testing uses corrugated vertical beams inside the subfloor, replacing unyielding flat beams. Small squares of metal were also cut from aluminum corner attachments where the beams and bulkheads meet at right angles. In the mini-mod concept, only the cutouts are used. Cross-sectional stiffness is preserved in both concepts, but "loads" approaching crash levels will cause the structure to give vertically.

In the full-scale crash tests, the planes will be swung by cables, pendulum styles, more than 200 feet from the top of an outdoor gantry onto a concrete-floor. The cables will be pyrotechnically severed at the last moment and the rocket-assisted planes will freely impact at a forward speed of 75-80 miles per hour.

Each test series adds data for computer analyses of crash dynamics. The aim of the NASA/FAA crashworthiness program on subfloors and floors is to learn enough about their structure to use computer predictions in place of actual testing.

"Of course, we don't design airplanes," Carden explains, "all we can do is provide the technology -- a data base -- to manufacturers and hope our general concepts will eventually work their way into the aircraft structure and save lives. There is a need for it."

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(NOTE: NASA-LANGLEY PHOTOS L-80-7563 AND L-80-7560 ARE AVAILABLE TO ACCOMPANY THIS RELEASE AND WILL BE PROVIDED BY PHONING KEITH HENRY AT 804-827-2934.)

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RELEASE NO. 81-50

NASA-LANGLEY RESEARCHERS STUDY SPACE ASSEMBLY OF LARGE STRUCTURES

A possible assembly line in space is being studied at NASA's Langley Research Center that would allow astronauts to construct large platforms or antennas in Earth orbit from the Space Shuttle.

The concept uses a mobile work station to position a pair of pressure-suited astronauts so they can move horizontally and vertically within a prescribed area to build space systems that are too large or complex to fold up and transport aboard the Shuttle.

The mobile work station is designed to be located inside the Shuttle Orbiter's payload bay or to be a free flyer, operating near the Orbiter.

A large-scale experimental model of the mobile work station is being tested at Langley. The ground test model will enable researchers to uncover difficulties that might be encountered in space and identify assembly aids to improve astronaut productivity, according to Harold Bush of Langley's Structures and Dynamics Division.

Two astronauts would be attached to the station by foot restraints, freeing their hands for assembly tasks, and enabling them to move around and build large platforms without using great amounts of effort.

The astronaut work platforms, one on each side of the mobile station,

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July 27, 1981

would be electrically operated, either from the platform or from within the Orbiter's flight deck.

The horizontal and vertical freedom of movement would allow the astronaut team to put together elements of a structure with relative ease. When a section of a structure is completed, it would be moved along the assembly line and the astronauts would extend its size by adding more elements or equipment.

The concept will be tested under normal Earth gravity conditions at Langley during July and August and under simulated space weightlessness conditions in the Neutral Buoyancy Facility at NASA's Marshall Space Flight Center in Huntsville, Ala., in September. In this facility, a large water tank, neutral buoyancy techniques simulate weightlessness.

Researchers will conduct these tests to gain basic information about the productivity of astronauts building large space systems, according to Bush.

The experimental work station will be used to construct large truss segments from lightweight, graphite-epoxy conical tubes that can be stacked compactly, like plastic cups, inside the Orbiter for transport into space. A pair of conical tubes are joined at their large ends to form a strut about 18 feet long.

Truss structures are assembled from these struts by joining their ends without tools, using quick-attachment cluster joints developed at Langley. The truss structures may be formed as antennas, beams, or platforms for large solar power or communication systems.

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(NOTE: NASA-LANGLEY PHOTOS L-81-6942, L-81-6943 and L-81-6944 ARE AVAILABLE TO ACCOMPANY THIS RELEASE AND WILL BE PROVIDED BY PHONING KEITH KOEHLER AT 804-827-2934.)

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RELEASE NO. 81-51

LEE TO ADDRESS SEVERE STORMS AT NASA LANGLEY RESEARCH CENTER

Hampton, Va. --Severe convective storms, with their visible features of hail, high winds, strong wind shear, turbulence and tornadoes, have a great impact on people as well as on aviation. The understanding of these storm hazards has been significantly improved in recent years through the melding of observations gathered by Doppler radar, satellites, photogrammetry and aircraft.

Mr. Jean T. Lee, a meteorologist-project scientist at the National Oceanic and Atmospheric Administration's National Severe Storms Laboratory, will discuss data collected in the investigations of severe storm hazards when he speaks at a colloquium Monday, August 10, at NASA's Langley Research Center.

Lee's lecture, "Severe Convective Storms," will be held in the Activities Center, Building 1222, at 2 p.m., preceded by a news briefing at 1:15 p.m.

In his lecture, Lee will describe the investigations that the Federal Aviation Administration, U.S. Air Force, NSSL and NASA are conducting of severe storm hazards and the avoidance of, or design for, these hazards in the development of aircraft and flight systems. Research results include correlation between storm turbulence and the Doppler radar radial wind's

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August 3, 1981

spectrum width, and detection of mesocyclone circulations about 30 minutes ahead of tornado formation. Lee will also discuss the Doppler weather radar's potential application to detection of aviation weather hazards.

Lee has been with NSSL since February 1964. In addition to his present work, he conducts research in weather satellite application to severe storm identification and forecast.

From 1959 to 1964 Lee was a research meteorologist with the U.S. Weather Bureau's National Severe Storm Project, the forerunner of NSSL; from 1954 to 1959 he was a severe local storms forecaster, responsible for tornado and severe storm forecasts for the continental United States; and from 1950 to 1954 he was an educational specialist in the Weather Bureau central office. During this time he developed a pilot briefer course and revised a book, "Meteorology for Pilots."

Lee first entered civilian government service in 1947 as an aviation forecaster in Jacksonville, Fla. He previously taught mathematics and physics at the University of Southern Mississippi. He served in the military service from 1944 to 1946 as a station weather officer in the continental United States and in the South Pacific.

Lee has received the AIAA's Losey Atmospheric Sciences Award for his contributions to flight safety in the vicinity of thunderstorms and the Department of Commerce's Silver Medal for contributions to storm turbulence descriptions, the improvement of tornado and severe local storm predictions, and the use of weather radar in safety to flight near thunderstorms.

Lee received bachelor and master of science degrees in meteorology from the University of Chicago in 1944 and 1962, respectively. He is a member of the American Meteorological Society and the American Association for the Advancement of Science. He is past president of the Kansas City and Central

Oklahoma chapters of AMS and past vice president of the Washington, D.C. chapter.

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RELEASE NO. 81-52

NASA SPONSORS CONFERENCE ON OPTICAL INFORMATION PROCESSING

Hampton, Va.--A NASA conference on Optical Information Processing for Aerospace Applications will be held at the Hampton Holiday Inn August 18-19. The conference is sponsored by NASA's Office of Aeronautics and Space Technology in Washington, D.C., and the Langley Research Center.

Approximately 125 engineers from government, industry and the education community are expected to attend sessions on information processing requirements for aerospace applications, optical systems for processing information, integrated optics and optical components, and optical information circuits.

Conference objectives are to outline present and projected aerospace information processing requirements and technological limitations which restrict and limit information extraction; provide a representative view of optical devices, techniques, components and systems used to extract information; and provide guidelines for future research in the field of optical processing.

Thirty papers will be presented during the conference, covering topics that include optical digital computers, new methods for optical matrix operations, incoherent optical matrix-matrix multiplier, monolithically integrated active optical devices, microchannel spatial light modulator, a liquid crystal adaptive lens and optical recognition of statistical patterns.

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August 6, 1981

William D. Mace, Langley's Director for Electronics, will welcome attendees at 9 a.m. in the Williamsburg Room of the Holiday Inn. Keynote speaker will be Peter Kurzhals, former Staff Assistant to the Director for Electronics at Langley and now Assistant Director for Research and Technology at the Goddard Space Flight Center in Greenbelt, Md. He will discuss "Future Information Processing Drivers in Spacecraft Systems."

The conference is open to anyone interested in optical processing. Registration will be held in the Williamsburg Room August 18 at 8 a.m. There is no registration fee but there is a \$12 charge to cover expenses for refreshments. Reservations should be made with Jane Everette, 827-3535, by August 14.

The conference chairman is Robert L. Stermer and program chairman is Rudy Segura, both of Langley's Flight Electronics Division.

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RELEASE NO. 81-53

KELSEY-SEYBOLD MEDICAL SERVICES RENEWED AT NASA-LANGLEY

The Kelsey-Seybold Clinic, headquartered in Houston, Texas, has been selected to continue providing occupational medical and environmental health services at NASA's Langley Research Center.

The company operates the Langley dispensary, providing emergency and other medical service to Langley's 3,000 government employees and approximately 1,000 contract workers, and environmental health protection.

Kelsey-Seybold has been a Langley contractor for the past five years. The company employs a staff of 12 people at Langley, including two physicians, a nurse-practitioner, three registered nurses and six technicians and clerical workers.

The new cost-plus-fixed-fee contract is valued at approximately \$2.8 million for a period of five years, beginning Oct. 1, 1981.

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July 29, 1981

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RELEASE NO. 81-54

HISTORY OF 'MOTHER LANGLEY' TO BE WRITTEN

Hampton, Va.--Despite more than 60 years of landmark aeronautical achievements, there exists no single full historical account of NASA's Langley Research Center. A formal program to publish Langley's history is now underway and NASA employees and retirees can help document the history of aeronautical technology.

Dr. James R. Hansen, who recently received a doctorate in history from Ohio State University, has been commissioned by the NASA History Office in Washington, D.C., to write a book on the "History of NACA-Langley, 1917-1958." Hansen began his 38-month stay at Langley June 15 and has already begun interviewing people who were at NACA-Langley during those years. NACA, the National Advisory Committee for Aeronautics, was NASA's predecessor agency.

According to Hansen, whose expertise is in history of scientific institutions, NASA has been looking for someone for a long time to write and publish Langley's history, but for various reasons the project has not been satisfactorily completed. "Histories of daughter NACA- and NASA-sponsored research centers in California (Ames and Dryden) either have been published or are in progress," Hansen said. "'Mother Langley's' own story lies neglected until now at the ancestral Hampton plantation."

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August 7, 1981

Neglect of the Langley history is more apparent than real, however, for NASA's History Office has never forgotten it, Hansen explained. For at least 15 years, the History Office has recognized the accomplishments of Langley people and facilities and has sought a publishable administrative and organizational history of the center. A former NASA historian, Dr. Eugene Emme, who considered the absence of this history as "one of the big gaps in the history of aeronautical technology," along with Langley retiree Bud Mulac and NASA historical advisers, frequently discussed the urgency for this work. In the 1960s and 70s attempts were made to write the history, one by a graduate student, another by an ex-Langley engineer, but these works were never published.

A formal historical program was developed about 18 months ago when Richard Layman, Langley's Historical and Artifacts Program Coordinator, was asked to take over the program. "Last year I established a historical repository and office space on the second floor of Langley's Technical Library," Layman explained. "I felt that if this was going to be a formal ongoing program, it needed a home. As a result of formalizing the program here, and the general support that I have received from center management and personnel, the NASA History Office responded much more positively to the situation and started working even harder to get our accomplishments documented."

Hansen said Layman organized and maintained many important center records, including in full set of NACA annual reports, programs of the Langley industry conferences, pictorial histories of aircraft and a valuable documents collection, all of which will make his job easier.

"A formal program always helps to attract the kinds of resources you need," Layman explained. "Jim is a resource, if you will, for the agency to get the history documented. Well-trained manpower is the number one resource. A qualified historian was needed to research the documents which I, and others

such as Mulac and retiree Neva Brooks has compiled, and to write the history. I just created the atmosphere for the program."

NASA employees and retirees who know of or have any Langley historical documents or artifacts dating from 1917 to 1958 should call Hansen, 827-3307, or Layman, 827-3511.

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RELEASE NO. 81-55

KLATE HOLT COMPANY TO CONTINUE SUPPORT SERVICES CONTRACT

Hampton, Va.--The Klate Holt Company, headquartered in Houston, Tex., has been awarded a two-year option to its contract to continue providing facility and equipment maintenance support services to NASA's Langley Research Center.

Some of the areas serviced and maintained under the contract include refrigeration and air conditioning systems; electrical systems; building trades, engineering, rigging, hauling and excavating services; and equipment maintenance.

The value of the two-year option is approximately \$13.2 million, bringing the total value of the cost-plus-award-fee contract, awarded in 1978, to \$28.6 million.

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August 11, 1981

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For Release:
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RELEASE NO. 81-56

NOTE TO EDITORS: VOYAGER 2-SATURN ENCOUNTER NEWS BRIEFING SET

NASA's Voyager 2 spacecraft, fast approaching Saturn, will make its closest approach to the planet at 11:25 p.m. EDT on Aug. 25.

NASA will hold a Voyager pre-encounter news briefing at 10:30 a.m. Aug. 13 in Washington, D.C. The briefing will be available at NASA's Langley Research Center, in the Wythe Room of the Activities Center, Building 1222, for anyone interested in listening. Questions may be asked from Langley by telephone through the newsroom at NASA Headquarters if they are submitted before the briefing begins.

Speakers during the briefing will include Dr. Edward Stone, Voyager project scientist; E. K. Davis, project manager; Dr. Bradford Smith, imaging team science leader; Andrew Stofan, acting NASA Associate Administrator for Space Science.

For further information, call the NASA Langley Public Affairs Office at (804) 827-2934.

During the week of encounter, special television programming will be available direct from NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif.

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August 10, 1981

NASA-Langley employees will be invited to view three hour-long satellite broadcasts, beginning at 8 p.m., August 24-27 in the Activities Center, which will be open to media representatives.

A separate news release will announce the Langley Visitor Center schedule of broadcasts from JPL, open to the public and to media representatives.

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RELEASE NO. 81-58

NASA-LANGLEY EMPLOYEES HONORED AT SERVICE AWARDS CEREMONY

Hampton, Va.-- NASA Langley Research Center employees with 40, 35 and 30 years of service and the recipients of the Outstanding Volunteer Service awards will be honored at a special ceremony Thursday, September 10.

Langley's annual Service Awards Ceremony will begin at 1:30 p.m. in the Activities Center, Building 1222.

Langley Director Donald P. Heath will present service emblems and certificates to the following:

Forty Years' Service:

Kenneth S. Bates; Joseph Briggs; Curtis M. Chappell, Jr.; Prentiss Childs; Glenwood C. Ford; James M. Hughes; Richard P. Kennedy; Sylvester J. Kubalak; William J. Leftwich, Jr.; Joseph Parker; and George H. Veneris.

Thirty-five Years' Service:

Laurence R. Bradshaw; Joseph F. Braig; Albert J. Cacioppo; William G. Chapin; Delwin R. Croom; Aubrey E. Cross; Howard J. Curfman, Jr.; Leslie E. Deane; Thomas W. Forrest; Sherwood Hoffman; William M. Johnson; George W. Jones, Jr.; James O. Joyner; Emma J. Landrum; Virginia S. LaPrade;

Paul E. Lentz; John C. McFall, Jr.; Raymond T. Moore; Richard H. Newman; J. Robert Padelt; Donald E. Pizzeck; Raould M. Price; Wilmer H. Reed, III;

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September 2, 1981

W. Carl Roberts; William I. Scallion; Frances E. Thompson; Ellery N. Vandebree;
Donald H. Ward; Johnny McK. Williams; William N. Willoughby; and Troy A. Wilson.
Thirty Years' Service:

Robert E. Andrews; Charles E. Barr; John T. Benthall, Jr.; Doris K.
Blanchard; Edward S. Bradshaw; James F. Bradshaw; Eugene L. Bunting; Ernest E.
Burcher; Benjamin F. Butler, III; Roger V. Butler; Malcolm P. Clark; Wilson W.
Clark; Edna C. Cox; Willaree R. Curtis; John R. Davidson; Clarence A. Dews, Jr.;
James A. Dorst; Kermit A. Edwards; Charles P. Eichelberger; Robert F. Emond;
Roland D. English; Robert P. Faust; Aubrey L. Fitzgerald; Charles D. Folwell;
Robert B. Forrest; Lee R. Foster, Jr.; Benjamin Franklin; Patrick A. Gainer;
Russell C. Gentry, Jr.; James W. Goodwin; David C. Grana; Ernest A. Gurganus;
Joseph F. Haggerty, Jr.; William C. Henley, Jr.; Stanley B. Heywood, Jr.;
Hiram T. Hogge, Jr.; James L. Hudgins; Joseph G. Hudson; Simeon R. Hunnicutt;
Robert C. Ingram; Mary W. Jackson; Dalma C. Johnson, Jr.; G. Warren Johnson;
George W. Johnson; Joseph S. Johnson; William B. Jones; Jack T. Kayton; H. Neale
Kelly;

David D. Kershner; Bonnie K. Land; Edwin E. Lee, Jr.; Ralph B. Lewis;
Charles E. Libbey; Ray D. Lowe; Domenic J. Maglieri; Clyde J. May; Alton P. Mayo;
John L. McCarty; Leo B. McHenry; Roger N. Messier; Jimmie C. Miller; Snowden C.
Mills, Jr.; Thomas C. Moore; William M. Moore;

William C. Moughon; Harold N. Murrow; Martha J. Norman; Robert E. Nye;
Robert L. O'Neal; Lawrence T. Parker; Mark E. Price; Tazewell O. Reed; Albert C.
Robinson; L. Conway Rogers, Jr.; Paul G. Sandefur, Jr.; Norma B. Schultz;
John W. Schwartz; Dolly F. Seward; John R. Smith;

William E. Stoops, Jr.; Andrew G. Swanson; Moody O. Topping; David F.
Varner; George R. Veney; Loretta W. Watkins; Otho E. White; William L. White;
Boyd L. Williams, Jr.; Earl E. Williams; Charles H. Wilson; Maywood L. Wilson;
John Witherspoon; and Doris R. Yates.

Outstanding Volunteer Service awards will be presented to Bertie Ann Garrett, for "long and dedicated public service in organizing and leading young girls to help others in the community" and Burnett W. Peters, Jr., for "outstanding volunteer leadership in religious, public, and private sectors of the Peninsula community, devoted to improving the quality of life and opportunities for others."

An Outstanding Volunteer Service Group Award will be presented to the Langley Colloquium Team, for "outstanding and dedicated service in conducting the Langley Colloquium Series."

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RELEASE NO. 81-59

NASA AERONAUTICS RESEARCHERS TALK TO COMPUTER 'FACE-TO-FACE'

Hampton, Va.--NASA aeronautics researchers who once swore they would never do their work at a computer terminal are rapidly being converted to the growing phenomenon of interactive computer graphics.

At NASA's Langley Researcher Center, where the new wave began within NASA, aerospace engineer Sharon H. Stack relates, "My favorite human guinea pig would input a fairly simple concept -- he would run the aerodynamics, change it, stabilize it, or whatever his goal was -- and he would just sit there shaking his head. He would turn and say, 'Sharon, this would have taken me three weeks to do, and I've done it in half an hour.'

"And the researchers still find it hard to believe," she laughs. "They say, 'This is fantastic. Not only that -- it's fun'."

Instead of assembling a stack of computer punch cards and waiting in line for time on Langley's large central computer, these researchers are discovering the advantages of interactive computer graphics. Immediate mutual activity with the computer is the principle benefit, made possible by creative programming tailored to the needs of engineers not trained as computer scientists.

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August 31, 1981

Langley researchers have been conversing with computers for years, but only recently have they been talking face-to-face. In interactive computer graphics, a computer program is designed to guide the user through a series of operations by asking for simple decisions at each step along the way, much like one of the new electronic video games that guides its "user" to make decisions that determine the mode of play.

For example, in the fictional game "Space Protectors," the video console flashes the question, "1 or 2 PLAYERS?" The player presses the appropriate number on a small keyboard. Then comes another choice of alternatives: "SELECT SKILL LEVEL 1, 2, 3 OR 4." The player presses the button labeled "2" and, suddenly, the screen is filled with electronically generated images of space ships, poised for action. A beginning player may want to take a few moments to study the scoring table now rapidly appearing, line-by-line, beneath the space ships. When the player is ready, he pushes the start button and gets to the real business of this interactive encounter.

Of course, the work at Langley is no game and the product is useful information, but when an aerospace engineer punches up his research program on one of the center's computer terminals the same sort of easy-to-follow, easy-to-use system is at his disposal.

Several research groups at Langley are using interactive computer graphics now, and one group that has rapidly and completely adopted it to research is the Performance Aerodynamics Branch where Stack and 16 other researchers do analytical and experimental evaluation of high-speed aircraft.

"We're a small group working in a very broad area, helping to keep the United States in high-speed research, to include both military and civilian applications. Even though the aircraft concepts we work with are high-speed -- up to eight times the speed of sound in some cases -- even high-speed aircraft must take off and

land, so we study the entire speed range to some extent. With our limited resources," comments Stack, "this is quite a challenge. Any useful information we come up with probably won't be used for about 20 years, but it will be used. It's a big task. In order to do a good job we had to come up with good ways to do the work with few people."

Stack is the first to admit that she is not a computer professional, but it was her fundamental knowledge of what a computer can do that led her and others in the research group to exclaim, "Oh, my goodness, let's clean this up a little, make things easier -- take away the drudge work!"

Although interactive computer capability has been available for several years, explains Stack, researchers are often encumbered by limited access and excessive costs. "It was the combination of keeping the majority of the analysis information in the central computer, with the researcher working directly only with the minicomputer and its quick response time, that resulted in the experiment's tremendous success," Stack said.

Meanwhile, Langley's "distributive" computer system, as it is called, has blossomed to four minicomputers and 44 terminals in the last six months, serving about 30 individual research groups.

Noel Talcott, in the same branch as Stack, is another enthusiastic supporter of interactive computer graphics. Talcott is developing methods for visually scanning large amounts of data where aerodynamic, thermodynamic and structural analysis information is graphically overlayed on a computer-generated line drawing of advanced high-speed aircraft, including the Space Shuttle. Color is especially effective in showing regions of high drag, temperatures or stress.

Talcott echoes Stack's view that, initially, it was hard to convince fellow researchers to use the computer frequently and intimately. "But," he says, "now the problem is getting them out of the chair and away from the console. We've

had to assign allotted times for its use." Talcott stresses that "we're not trying to sell our exact system to other research groups, just the basic idea of allowing the user to choose individual paths for system flexibility."

Stack is NASA's representative to the American Institute of Astronautics and Aeronautics' technical committee on interactive computer graphics. She believes that aerospace researchers now using these interactive techniques have more time to consider different aircraft concepts and have a better chance of developing the best ones. "In addition," she says, "configurations and ideas that were impossible to consider before can now be pursued without having to worry about the amount of time and effort that will be required. As a result of all this, the aerospace industry can draw upon our research to design even safer, more reliable high-speed airplanes."

- 30 -

(NOTE: NASA-LANGLEY PHOTO L-81-115 IS AVAILABLE TO ACCOMPANY THIS RELEASE AND WILL BE PROVIDED BY PHONING KEITH HENRY AT 804-827-2934. PLEASE SPECIFY BLACK AND WHITE OR COLOR.)

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RELEASE NO. 81-61

LANSING, PINELLI SELECTED FOR CRITICAL ASSIGNMENT WITH NASA

Hampton, Va.--Two NASA Langley Research Center employees have been selected for temporary assignment in NASA's Critical Assignment Development Program (CADP).

Donald L. Lansing, Head, of the Unsteady Aerodynamics Branch, Loads and Aeroelasticity Division, will be Program Manager in the Propulsion Office, Research and Technology Division, at NASA Headquarters in Washington, D.C.

Thomas E. Pinelli, Assistant Chief, Research Information and Applications Division, is filling the temporary vacancy of Chief, Technical Information Division, at NASA's Ames Research Center, Moffett Field, Calif.

The CADP is designed to meet a critical program need at NASA Headquarters or a field center and to develop employees who have special skills critical to a NASA program. The program is a temporary assignment for up to one year, augmented by agency, interagency and Congressional seminars, briefings, meetings and hearings.

Lansing began his Langley career in 1956 as an aerospace engineer. In 1969 he became Head of the Theoretical Acoustics Section in 1974 Head of the Acoustics Branch and in 1978 Head of the Aeroacoustics Branch, all in the Acoustics and Noise Reduction Division. He became Head of the Unsteady Aerodynamics Branch in 1981.

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September 4, 1981

Lansing has specialized in the fields of applied mathematics, linear wave propagation and aircraft noise, and has been a key contributor to Langley's acoustics research since 1969.

A native of New York, he received a bachelor of science degree in mathematics from Union College in 1956 and a master of science degree in mathematics in 1963 from Virginia Polytechnic Institute and State University. He has completed graduate work in applied mathematics at North Carolina State University and was awarded a one-year Stanford Sloan Fellowship in Advanced Management at Stanford University in 1973.

Lansing and his wife, Janet, live in Newport News, Va., They have three sons.

Pinelli began his NASA career in 1974 as an Administrative Operations Specialist. In November 1976 he was appointed Assistant to the Chief, Scientific and Technical Information Programs Division, now the Research Information and Applications Division.

He was selected as one of 10 potential managers throughout NASA to participate in the 1978-79 NASA Career Development Program, serving a one-year training assignment at NASA Headquarters in Washington, D.C. From August 1978 to January 1979, he was a Project Officer in the International Affairs Division at NASA Headquarters, where he was responsible for a variety of international scientific, applications and technical projects.

From January to July 1979, he was Special Assistant to the Deputy Director, Office of Administration, Executive Office of the President, where he developed and implemented the first publications management program for the White House and the Executive Office of the President. He returned to Langley in August 1979.

From 1972 to 1974 Pinelli was on loan to NASA through the Intergovernmental Personnel Act from the Virginia Beach City Public Schools and served as Langley's Assistant Educational Programs Officer in the Office of Public Affairs. Before

coming to Langley, Pinelli was a teacher and a department chairman in the Virginia Beach City Public School System.

A native of Johnston, R. I., Pinelli received a bachelor of science degree in secondary education from Old Dominion University in 1970. He received a master of science degree in industrial education from Clemson University in 1972, a master of science degree in education administration from Old Dominion University in 1976 and a master of public administration from Golden Gate University in 1978. He has done advanced graduate study at the University of Virginia, Virginia Polytechnic Institute and State University and Catholic University.

Pinelli lives in Virginia Beach, Va.

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RELEASE NO. 81-62

CUDDIHY RETIRES FROM NASA-LANGLEY

Hampton, Va.--William F. Cuddihy, Chief of the Plant Engineering Division, retired from NASA's Langley Research Center August 29. He had been responsible for construction and maintenance of facilities and energy management at Langley since March 1980.

Cuddihy began his NASA career in 1958 as an aerospace technologist in the Instrument Research Division, working on the Echo Satellite, Project Mercury and Project Gemini. In 1963 he was named Head of the Telemetry Research Section of the Flight Electronics Division. In 1969 he became Electronics Manager for the Viking Project and, later, Deputy Lander Manager, Systems Engineering Manager, Deputy Chief Engineer and Chief Engineer for the Viking Extended Mission. He became Assistant Chief of the Systems Engineering Division in May 1978, where he worked on several space projects and the construction of the National Transonic Facility, a cryogenic wind tunnel.

Before joining the Langley staff, Cuddihy conducted research in ferrites, semiconductors and high-powered arcs for the Linde Company. He was in the U.S. Army from 1945 to 1947.

A specialist in electronics, space communications, computers and systems engineering, Cuddihy has written or co-authored more than 20 publications and holds

patents on a reentry communications system and a plasma arc device. He has received many NASA awards, including a NASA Exceptional Service Medal.

Born in Hopewell, Va., Cuddihy graduated from Hopewell High School. He received a bachelor of science degree in 1951 and a master of science degree in 1953 in electrical engineering from the University of Virginia.

Cuddihy and his wife, the former Sue Salim, live in Yorktown, Va. They have three children.

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RELEASE NO. 81-63

SHULL TO DISCUSS WATER PROBLEMS AT NASA-LANGLEY COLLOQUIUM

Hampton, Va.--Environmental problems--accidental and planned spills, ground water contamination, organic regulations, acid precipitation, and the increasing scarcity of water-- face the water utility industry. What is being done about them will be discussed at a colloquium Monday, September 14, at NASA's Langley Research Center.

Kenneth E. Shull, Vice President of Research and Environmental Affairs, Philadelphia Suburban Water Co., will discuss "Some Water Problems and How the Industry is Trying to Solve Them" at 2 p.m. in the Activities Center, Building 1222. A news briefing will precede the lecture at 1:15 p.m.

In his lecture, Shull will describe what the water utility industry is doing to correct the six problems, which "are very real," Shull said, "and they're going to be with us for a long time. But, optimistically, the industry has the technical know-how and the desire to resolve them."

According to Shull, one of the industry's primary goals is the consistent delivery of enough high-quality water to all customers--hour after hour, day after day, year after year.

Employed by the Philadelphia utility since 1938, Shull has been Chief

--more--

September 8, 1981

Chemist; Superintendent of Water Treatment; Vice President, Public Relations and Water Quality Control; and Vice President, Water Treatment, Quality Control and Research.

A native of Pennsylvania, he received a bachelor of science degree in chemistry from the Philadelphia College of Pharmacy and Science in 1938.

He is a member of many professional and scientific organizations, including the National Water Well Association, American Chemical Society, American Water Works Association, Water Pollution Control Federation and American Association for the Advancement of Science.

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RELEASE NO. 81-64

WOOD RECEIVES NTA AWARD

Hampton, Va.--David C. Woods, a physicist in the Aerosol Measurements Research Branch, Atmospheric Environmental Sciences Division, at NASA's Langley Research Center, received the Dr. A. T. Weathers Technical Achievement Award at the 53rd Annual National Technical Association (NTA) Convention in Detroit August 4-8.

The award, named after an NTA founder, honors people who distinguish themselves by significant technical achievements or contributions. Woods, a member of the Hampton Roads Chapter of NTA, was recognized for his "contributions to characterization of atmospheric aerosols through the development and application of the quartz crystal microbalance (QCM) technique, leading to increased knowledge of the properties of aerosols from volcanic emissions, from rocket firings and on the background stratospheric aerosols."

NTA, established in 1925, is comprised of scientists, engineers and students dedicated to providing an exchange of information among minorities in technical fields.

Employed at Langley since 1962, Woods is responsible for measurement and characterization of atmospheric aerosols, including stratospheric measurements,

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September 11, 1981

characterization of rocket exhaust effluents and characterization of volcanic emissions.

One of his most significant developmental contributions is the QCM technique, which measures the size of aerosols in real time. Woods has continuously improved this technique from a one-size to a ten-size range covering the most important aerosol sizes.

The QCM was flown through volcanic plumes in Guatemala and at Mount St. Helens in Washington and in a NASA program in the Caribbean, providing new data that can now be applied by volcanologists and atmospheric modelers to understand the geophysics of volcanos and their significance to atmospheric physics and chemistry. It was most recently used to provide correlative aerosol measurements for two satellite experiments, Stratospheric Aerosol Measurements II and Stratospheric Aerosol and Gas Experiment.

Woods graduated from J. B. Dudley High School in Greensboro in 1957. He received a bachelor of science degree in engineering physics from North Carolina A&T State University in 1962 and a master of science degree in physics from Old Dominion University, Norfolk, Va., in 1973.

The author or co-author of over 25 technical publications, Woods has received a NASA Exceptional Service Medal, three NASA Group Achievement awards and two NASA Special Achievement awards.

He is a member of the Optical Society of America, the American Institute of Physics and the National Technical Association.

Woods and his wife, Thomasena, live in Hampton, Va., with their two children.

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RELEASE NO. 81- 65

SHUTTLE PAYLOAD INVESTIGATORS MEET AT NASA-LANGLEY

The first international meeting of investigators for the Long Duration Exposure Facility (LDEF)--a major Space Shuttle payload--will be held at NASA's Langley Research Center September 15-17.

Approximately 100 representatives of universities, private companies, government agencies and eight foreign countries are expected to attend the three-day LDEF Investigator Working Group Meeting at Langley's Activities Center.

Together for the first time will be most of the investigators who are working on 47 separate scientific and technical experiments that will be placed in low Earth orbit for passive exposure to the space environment for about one year.

Scheduled to be ready for launch in January 1984, LDEF is the largest payload now planned to be deployed in Earth orbit and retrieved by the Shuttle Orbiter.

Speakers at the meeting will include Don L. Lind, Shuttle astronaut; Chester M. Lee, Director of Space Transportation Systems Utilization, NASA Headquarters; and Howard T. Wright, Director of Projects at Langley, who will welcome the investigators to the meeting.

First-day activities will be devoted to discussions of the objects of each experiment and what each is designed to accomplish. Discussions will be divided

-more-

September 14, 1981

into reviews of experiments in materials, structures and coatings; power and propulsion; science; and electronics and optics.

Of primary interest will be discussions on how to share information of common interest after the first mission is completed, and how to insure compatibility between experiments.

On the second day, investigators will learn how their experiments will be integrated into LDEF and Shuttle operations. Included will be status reports on LDEF and Shuttle; experiment integration and flight acceptance testing at Langley; experiment checkout, installation and removal at the Kennedy Space Center launch site; and LDEF mission operations.

The third day will be devoted to small group meetings of investigators with common interests.

Foreign representatives at the meeting include investigators from the United Kingdom, West Germany, France, Switzerland, the Netherlands, Denmark, Ireland and Canada.

The cylindrical LDEF structure, approximately nine meters long and 4.5 meters in diameter (30 x 15 feet), will be placed into orbit 465 kilometers (290 miles) above Earth for about a year. The passive experiments will be contained in about 200 large trays attached to the outer circumference of the structure.

LDEF experiments include such diverse investigations as the effect of space radiation on biological specimens, obtaining information about the formation of the solar system, and development of advanced materials, coatings and solar cells for space use.

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RELEASE NO. 81-67

EDWIN C. KILGORE TO RETIRE FROM NASA

Edwin C. Kilgore, NASA Associate Administrator for Management Operations, will retire October 2 after 37 years of service with NASA and its predecessor agency, the National Advisory Committee for Aeronautics.

Kilgore is the senior NASA official responsible for all institutional management and for management of resources in support of programs at all NASA installations.

Ms. Ann P. Bradley, Deputy to Kilgore, will be Acting Associate Administrator for Management Operations.

Kilgore has received many awards and decorations: The Presidential Meritorious Award in 1980, the Roger Jones Award for Executive Leadership from American University in 1978, and NASA's Distinguished Service and Outstanding Leadership medals. He is also a winner of the Honorary Group Achievement Award of the Rocket Motor Review Board for his work in helping achieve a record of 97 consecutive firing successes for solid-fueled rocket motors.

Born January 24, 1923, at Coeburn, Va., Kilgore is a 1944 graduate of Virginia Polytechnic Institute, where he received a bachelor's degree in mechanical engineering.

-more-

September 15, 1981

He joined the staff of the Langley Research Center after graduation and was assigned to the Engineering Division as a developmental design engineer of specialized research equipment. He became Technical Assistant of the Machine Design Branch in 1954, and Assistant Chief of the Engineering Service Division in 1960.

Designated Chief of the Flight Vehicles and Systems Division in May 1969, he shared responsibility for setting policies to operate and manage centralized Engineering support to all Langley research activities.

Kilgore had an important role at Langley in the conceptual planning, design and problem-solving for such space projects as Lunar Orbiter, the S-55 Micrometeoroid Satellite, the Scout and San Marco launch vehicles, Project Fire and Echo satellites 1 and 2.

He first went to NASA Headquarters in 1970, where he had several management jobs, including Deputy and Acting Associate Administrator (Management) in the Office of Aeronautics and Space Technology.

He became Deputy Associate Administrator for Center Operations, a new office formed in 1974, responsible for all NASA field center operations.

Kilgore returned to Langley in 1975 as Director of Management Operations. He was responsible for major administrative functions and oversaw center activities in personnel, financial management, procurement, management support, business data systems, programs and resources, scientific and technical information, occupational health services and technology utilization.

He returned to NASA Headquarters in August 1979 as Acting Associate Administrator for Management Operations; in March 1980, he was named to that position.

Kilgore and his wife, Ann, have two daughters and live in Hampton. Mrs. Kilgore was Mayor of Hampton for 12 years.

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RELEASE NO. 81-68

NASA-LANGLEY WINGLETS TESTED ON DC-10 JETLINER

Hampton, Va. - Winglets--NASA-developed devices designed to increase the fuel efficiency of airplanes--are being test-flown aboard a wide-body commercial aircraft as a part of NASA's Aircraft Energy Efficiency Program.

Winglets are small, wing-like structures attached to the tips of an airplane wing, almost perpendicular to the wing surface. They cut fuel-consuming drag in aircraft by lessening the effect of wingtip vortices, the turbulent swirls of air that form at the wingtips of all aircraft in flight.

The test plane, a DC-10 Series 10 jetliner leased from Continental Airlines, has two winglets attached to each wing tip: a 3.2-meter (10.5-foot) winglet is atop the wing, pointing upward; a 0.8 m (2.5-ft) one is attached beneath the wing and pointing downward.

The test program is being conducted by the McDonnell Douglas Corp. under a contract with NASA's Langley Research Center. Early flight tests have been made at NASA's Dryden Flight Research Center, Edwards, Cal.; later tests are being flown at a Douglas development facility at Yuma, Ariz.

Based on wind tunnel tests, a fuel reduction of about three percent is expected with the DC-10 winglets. That amounts to an annual savings per plane

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September 15, 1981

of about 250,000 gallons of fuel, now priced at more than one dollar a gallon. A successful test program may lead to the use of winglets on all DC-10 commercial aircraft.

The winglet concept was developed by Dr. Richard T. Whitcomb, recently retired Langley aeronautical designer. They have been tested on several kinds of small aircraft, but never before on a plane as large as the DC-10. Winglets are already in commercial use on the Gates Learjet 55 (called the "Longhorn") and the Grumman Gulfstream III.

Winglets reduce lift-induced drag, which accounts for about 40 percent of the total drag on an aircraft at cruising speed and altitude. Lift-induced drag is produced by the same aerodynamic forces that provide the lift that keeps an airplane in the air.

Instead of extending an airplane's wingspan, which adds fuel-consuming weight, winglets can reduce drag with much less weight penalty.

Lift-induced drag is primarily caused by wingtip vortices. Winglets reduce the effect of a vortex by lessening its strength and moving it outward and upward toward the tip of the winglet.

Dr. Whitcomb was a consultant to McDonnell Douglas on the design and placement of the DC-10 winglets. Preliminary wind tunnel tests were conducted at Langley, NASA's Ames Research Center and at Douglas, beginning at Langley in 1976.

NASA's Aircraft Energy Efficiency Program is developing improved technologies that could reduce fuel consumption by 50 percent in new transport airplanes.

Aeronautical research is the primary focus at four NASA centers: Langley; Ames, near Mountain View, Cal.; Dryden at Edwards, Cal; and the Lewis Research Center, Cleveland, Ohio.

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RELEASE NO. 81-69

NASA TO GIVE HIGH-FLYING COMMUTERS A LIFT

Hampton, Va.--Advances in aviation technology at NASA's Langley Research Center, Hampton, Va., could revolutionize commuter flying in the 1990s. New aircraft designs based on NASA technology advances could be on industry drawing boards within 10 years.

These new commuter aircraft would use advanced aerodynamics, propulsion, materials and control and guidance systems being developed at Langley and at NASA's other leading aeronautical centers -- Ames Research Center, Mountain View, Calif.; Dryden Flight Research Center, Edwards, Calif.; and Lewis Research Center, Cleveland.

NASA research is aimed at the technology needed for efficient 20- to 60-passenger turboprop concepts that will be larger, faster and that will travel farther than today's commuter aircraft.

Lou Williams, head of Langley's General Aviation and Commuter Technology Office, notes the rising interest in commuter aircraft caused by higher oil prices and airline deregulation which have created "a much greater demand than supply for commuter aircraft."

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September 22, 1981

New technology is needed to meet the dual challenge of costs and comfort. Because of their smaller passenger capacity and short-haul operation, small aircraft must be even more cost-effective than large transports.

Travelers accustomed to the comfort of a large airliner want to find the same comfort in a commuter aircraft or they may shun the short hop airline in favor of surface transportation.

"It's tough," says Williams, "but we're trying to anticipate the future and, hopefully, bring along the technologies most likely to be applied by the manufacturers so the technological tools will be ready in time. NASA is contributing its expertise through wind tunnel testing, computer analysis and many other areas," and through research providing industry with technological data that industry considers too high a risk for them or lacks the resources to develop.

"We're not just evaluating existing designs, but are concentrating on advanced configurations and innovations that offer dramatic improvements," says Williams.

Some of these innovations might surprise the commuter of 1990. Instead of the usual expansive wing, researchers now believe a narrow, slender wing might provide greater lift efficiency. Greater lift is important to aircraft that spend much of their time in flight climbing or descending.

The new turboprop engines that will power the commuter aircraft may be located on either side of the narrow fuselage below the vertical tail and horizontal stabilizers. There they will not interfere with the smooth flow of air over and around the wings and fuselage.

Smaller, more efficient high-speed propellers can allow the engines to be installed on the tail, contributing to a quieter ride for the traveler. The use of a smaller tail plus extensive use of advanced composite material structures

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will help make the commuter airplane of the future lighter, thus more fuel efficient, helping keep down the price of tickets for commuter passengers.

An on-board computer could smooth the ride of the future commuter aircraft by adjusting more rapidly the airplane's control surfaces to make the craft slice through gusts of air and air turbulence with a minimum of "bounce."

NASA hopes to have much of the new technology ready in four to six years. Concludes Williams, "This research would deliver the technology in time for the next generation of commuter transport aircraft for the late 1980s and early 1990s. The country will need that generation's potential dramatic improvements in passenger acceptance, economics, energy efficiency, safety, performance and environmental compatibility. Such improvements would do much to strengthen the nation's transportation system and insure convenient access to air travel for small communities."

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NASA News

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RELEASE NO. 81-70

NASA RESEARCHER TAKES FOURTH INDUSTRIAL RESEARCH/DEVELOPMENT AWARD

Hampton, Va.--An aerospace researcher at NASA's Langley Research Center has earned his fourth annual award in the prestigious IR-100 competition for advancing science and technology.

Dr. Joseph S. Heyman, one of 100 government and business recipients so honored in this year's competition, is the first in the 12-year history of the award to be included four times.

The IR-100 award is presented by Industrial Research/Development magazine to the 100 scientists or engineers judged to have contributed the most significant technological developments during the course of the preceding 12 months. The award is in the form of a plaque to the researcher's employing agency or company. Selections are made by a panel of scientists and executives from government and industry after a review of current technology from around the world.

Heyman, of Langley's Instrument Research Division, and Larry P. Yoder of the U.S. Department of the Interior, Bureau of Mines, collaborated to develop a device they call a geodynamic accumulated strain sensor--or GAS², for short. The award will be presented to both men and count as one of this year's 100 awards.

-more-

September 22, 1981

GAS² promises to have far-reaching applications in the measurement of stresses deep within structures--both natural and man-made--but was specially designed to increase the safety of mining operations by gauging the stability of rock in a mine's walls and ceiling.

The device uses ultrasonic sound waves to measure stresses within the rock for the first time, resulting in more accurate, reliable information. Prior to this sensing system, a device would have to be mechanically bonded to the external surface of a rock mass at two points to determine if any relative movement had occurred. Part of the problem with such a system is that glue at the attachment points can deteriorate over time, allowing the mechanical device to slip.

John Samos, Head of Langley's Technology Utilization and Applications Office, will accept the award for Heyman at the Museum of Science and Industry in Chicago, Sept. 24. An exhibit will be opened to the public on that day featuring the technological advances represented by the IR-100 award winners. The exhibit will remain open approximately one month.

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RELEASE NO. 81-71

NASA CHEMISTS TAKE AWARD FOR AEROSPACE RESEARCH

Hampton, Va.--Three research chemists at NASA's Langley Research Center have won an award in the prestigious IR-100 competition for advancing science and technology.

Anne and Dr. Terry St. Clair, husband and wife, and Dr. Vernon Bell, count as one of the 100 government and business recipients honored in this year's annual competition. It is Dr. St. Clair's second IR-100 award.

The IR-100 award is presented by Industrial Research/Development magazine to the 100 scientists or engineers judged to have contributed the most significant technological developments during the course of the preceding 12 months. The award is in the form of a plaque to the researcher's employing agency or company. Selections are made by a panel of scientists and executives from government and industry after a review of current technology from around the world.

Bell and the St. Clairs, all from Langley's Materials Division, collaborated to develop a material for preparing high temperature polyimide film laminates called LARC-TPI. The award will be presented to all three and count as one of this year's 100 awards.

-more-

September 22, 1981

Polyimide laminates are presently being used commercially in flexible electrical circuits in computers, cameras, telephone systems, medical equipment controls and in missile guidance systems. These interconnection devices save space and assembly time. It is anticipated that additional uses in aerospace and other applications will be forthcoming now that electronic designers no longer consider flexible circuits as experimental but accept them as reliable. One problem that has limited their use is the ability of present flexible circuits to remain reliable under extreme temperature variations.

In coming up with LARC-TPI -- which stands for Langley Research Center Thermoplastic Polyimide -- the three Langley researchers have developed a high-temperature material which can successfully bond large areas and shows considerable commercial potential.

In addition to its use as an adhesive for the large-area bonding of metals and films, LARC-TPI is being developed for possible use as a molding powder, composite matrix resin, high temperature film and fiber.

John Samos, Head of Langley's Technology Utilization and Applications Office, will accept the award for Bell and the St. Clairs at the Museum of Science and Industry in Chicago, Sept. 24. An exhibit will be opened to the public on that day featuring the technological advances represented by the IR-100 award winners. The exhibit will remain open approximately one month.

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RELEASE NO. 81-72

CONTRACT CONTINUED FOR NASA LAUNCH VEHICLE

Hampton, Va.--Vought Corp., aerospace subsidiary of LTV Corp., has been awarded a contract for systems management of the Scout launch vehicle by NASA's Langley Research Center, Hampton, Va.

The contract, valued at just over \$39 million, is a three-year continuation of a similar contract awarded in 1976 and modified in 1979. The new contract begins November 1, 1981.

Under terms of the contract, Vought will provide all systems management, which includes systems engineering, reliability and quality assurance programs, vehicle processing and launch and logistics support services.

A total of 102 Scout vehicles have been launched since 1960, placing small payloads into Earth orbit for NASA, the Department of Defense, Italy, Great Britain, France, West Germany and The Netherlands.

Since becoming prime contractor for the Scout in 1958, Vought has built 117 of the vehicles.

Smallest and least expensive of NASA's expendable launch vehicles, the 75-foot-tall Scout is launched from three sites: NASA's Wallops Flight Center on Virginia's Eastern Shore; Vandenberg Air Force Base, Lompoc, Cal.; and Italy's San Marco sea platform off the east coast of Kenya, Africa.

-more-

September 25, 1981

As Scout management agency, NASA is in charge of vehicle procurement and launching for the Department of Defense and foreign users on a cooperative or cost-reimbursable basis.

Scout will continue a launch schedule at least through 1985, according to present NASA planning. Nine launches are scheduled during the three-year span of the contract extension.

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RELEASE NO. 81-73

LANGLEY RESEARCH CENTER EMPLOYEES RECEIVE ADVANCED DEGREES

Seventeen staff members have received advanced degrees through the center's Graduate Study Program during Fiscal Year 1981.

The program, established in the late 1940's , provides Langley scientists, engineers, and administrators an opportunity to improve their proficiency in aeronautical and space research and earn advanced degrees while working at Langley. Approximately 812 employees have been awarded master's or doctoral degrees through the program.

New doctoral degrees have been awarded to the following six employees: Robert E. Smith, Jr., Analysis and Computation Division, and John T. Suttles, Atmospheric Environmental Sciences Division, Doctor of Philosophy in Mechanical Engineering; and Theodore A. Talay, Space Systems Division, Doctor of Philosophy in Civil Engineering, all from Old Dominion University; Leonard M. Weinstein, High-Speed Aerodynamics Division, Doctor of Philosophy in Aerospace Engineering from the University of Florida; and Christopher Gracey, Flight Dynamics and Control Division, Doctor of Philosophy in Aerospace and Ocean Engineering from Virginia Polytechnic Institute and State University.

Master's degrees were awarded to 11 employees: Leonard V. Clark, Terminal Configured Vehicle Program Office, Master of Business Administration

in Aviation from Embry-Riddle Aeronautical University; Susan A. Motley, Research Information and Applications Division, Master's in Library Science from the Catholic University of America; and Daisy W. Alston, Transonic Aerodynamics Division, Master of Arts in Mathematics from Hampton Institute.

Franklin P. Keesee, Jr., Scout Project Office, Master of Engineering Administration; Michael C. Gorula, Business Data Systems Division, Master of Science in Administration; Jimmy L. Pittman, High-Speed Aerodynamics Division, Master of Science in Flight Mechanics; and Dewey L. Clemmons, Jr., Aeronautical Systems Division, Master of Engineering Administration in Administration of Research and Development, all from George Washington University.

David J. Carter, Jr., Long Duration Exposure Facility Project Office, Master of Business Administration in Management; Wayne S. Melton, Research Information and Applications Division, Master of Public Administration; Vivian B. Merritt, Office of Equal Opportunity Programs, Master of Public Administration in Administration Organization and Management, and Marvin C. Clemmons, Analysis and Computation Division, Master of Business Administration Management, all from Golden Gate University.

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RELEASE NO. 81-74

JOSEPH BRAIG, THE LAST OF FIVE BROTHERS, LEAVES LANGLEY

Hampton, Va.--There are probably not many families that can boast of accumulating over 100 years of service with an agency, but Joseph F. Braig of Hampton and his brothers surely can. Together, five Braig brothers have accumulated 184 years with NASA and its predecessor agency, the National Advisory Committee for Aeronautics.

The Braig era ended, however, September 8, when Joe Braig, the Langley Research Center's first and only Small Business Specialist, retired with 35 years of service.

Braig who is responsible for establishing the Small Business Program at Langley, said a Braig has worked at NASA for the past 57 years. "All of the Braigs began their careers at Langley," he said, "beginning with Raymond E., the oldest, in 1924. Raymond has Naval pilot training and was a pilot in mechanics in Flight Operations." Shortly after the Ames Research Center, at Moffett Field, Calif., was established, Raymond transferred there, where he was Chief of Mechanical Engineering Services until his death in 1965.

James "Ros" and Eugene C. spent a few years at Langley before going to the Lewis Research Center, Cleveland, Ohio. They both retired in 1970, Ros as Deputy Director of the Plum Brook Station and Eugene as Chief, Equipment Supply

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September 28, 1981

services. They accumulated 33 and 41 years of services, respectively.

Richard V. began his career at Langley in 1937 and died in 1971 while a Contractor Relations Officer.

Joe Braig said he was the last of his brothers to be employed by Langley and the last to leave. "Two of my brothers outranked me in service, three in age," he explained. "Three of us retired from the agency and two died while still working."

The brothers attended schools in Hampton, moving to the area after their father retired from the U.S. Air Force after a 41-year career.

When Joe Braig joined the Langley staff, he was an engineering aide, writing mechanical specifications for Cabell Messick in the Engineering Service Division. In 1958 he transferred to what was then the Procurement Division, working for Sherwood Butler. In 1959 he was appointed Small Business Specialist.

The work with small businesses evolved from the Small Business Act of 1953 and the National Aeronautics and Space Act of 1958, which states that NASA is to place a fair proportion of its total purchases and contracts with small business concerns.

"In 1959 NASA Headquarters said that each center was to have a contact in the small business industry," Braig explained. "I was the point of contact to which small businesses could direct inquiries concerning participation in the NASA procurement program or secure assistance in submitting bids or proposals, as well as performance of contracts."

Braig said that, as the Small Business Program grew, NASA became involved in equal opportunity and the disadvantaged or minority groups program, and had to establish goals to include minorities under Section 8(a) of the Small Business Act.

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Section 8(a) authorizes the Small Business Administration (SBA) to enter procurement contracts with federal agencies and, in turn, to subcontract the work to small businesses. The program emphasizes providing subcontracts to businesses owned by socially or economically disadvantaged people to help them achieve productive and economic stability in a competitive business environment.

Langley pioneered the Section 8(a) program within NASA by being the first NASA center to enter an agreement with SBA, signed in June 1970. Langley was also the first NASA center to award a contract for construction of a building to an 8(a) firm.

Eugene D. Rosen, Small Business Advisor in the Office of Small and Disadvantaged Business Utilization at NASA Headquarters in Washington, D. C. said "Braig was a stalwart supporter of the 8(a) program. He was involved in the very first 8(a) contract that NASA ever awarded, which was for \$3,500, and has probably been involved in every one that Langley has awarded."

Since June 1970, Rosen said Langley has awarded contracts in excess of \$27 million to minority firms in the Tidewater area and approximately \$414 million to small businesses, most of which Braig has been responsible for. Rosen said that during the first year of the 8(a) program, FY 1970, NASA awarded \$76,000 in contracts to small business and, of that amount, Langley awarded \$50,000.

Braig said Langley has always exceeded its goals under the SBA Section 8(a) Program and will exceed them again this year. "Millions of dollars have gone into that program and I am very proud of what we have done and of the role I have played in helping Langley reach those goals."

He serves on the Board of Directors for the Tidewater Area Business Contractors Association and is a member of the Minority Business Opportunity Committee. Most recently he was selected by the Peninsula city mayors to serve on the Board of

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Directors for the Virginia Peninsula Economical Development Council.

One of the highlights of his career was "bringing small business contracts back to Virginia contractors," as he put it. "For example, our guard service was performed by Howard Security Services of Baltimore. There wasn't a Virginia firm that qualified for the contract. I suggested ways for Virginia firms to improve their 'track records.' They did, and Langley was able to award the guard contract to Metropolitan."

Braig said he has had an outstanding and excellent relationship with the small business and minority community. That is evident by the number of awards and certificates of recognition, such as Langley's and NASA's Equal Opportunity Awards and citations from U. S. Representative Paul Tribble and former Congressman Thomas Downing.

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RELEASE NO. 81-75

SMALL TAIL IN FRONT MAY MAKE LIGHT PLANES SAFER

Hampton, Va.--Researchers at NASA's Langley Research Center, trying to enhance flight safety, are helping to make light planes inherently stall and spin-resistant.

Aircraft safety and efficiency is the focus of work at Langley and NASA's other leading aeronautical centers -- Ames Research Center, Mountain View, Calif.; Dryden Flight Research Center, Edwards, Calif.; and Lewis Research Center, Cleveland.

During the past decade, more than 100,000 Americans were involved in more than 39,000 light plane accidents, according to a recent report by the National Transportation Safety Board.

Nearly one in four of those accidents are believed to have been due to loss of control after the planes were either purposely or accidentally maneuvered into a stall or spin.

One promising development in stall and spin prevention research is the rediscovery of the canard -- a miniature wing that sprouts from the aircraft nose area.

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October 5, 1981

The canard is the most recent focus of a NASA research program aimed at making light planes safer. Joe Chambers, assistant chief of Langley's Low-Speed Aerodynamics Division, strongly believes that "the aircraft tail-first, canard configuration is the shape of light planes for the 1990s."

The potential advantages of some of these far-out looking canard-configuration aircraft are very promising, both in terms of safety and efficiency.

The canard was first proven effective by the Wright brothers at the turn of the century. Since then, it has been largely neglected due to early patent considerations and occasional flight handling problems.

The rebirth of the canard is being hastened by the booming market in home-built airplanes. Several designer-manufacturers are selling airplane kits to the public that include this forward, horizontal wing surface, in part because of fuel efficiency.

A demonstrated safety advantage, however, is what intrigued Langley researchers when they approached the designer of the VariEze, a novel-looking home-built airplane with canard, no horizontal tail, and a rear propeller engine. Constructed and flown by more than 400 kit builders in the United States, this two-seater (and others similar to it) have amassed an impressive stall-spin safety record.

A stall -- loss of wing lift and, thereby, loss of aircraft control -- generally occurs at low speeds and at certain flight attitudes, though stall can occur at any speed with gross and abrupt control inputs. A stall can cause a plane to veer sharply off course and out of control into a spin. Spins in some airplanes are unrecoverable.

Tests of a VariEze scale model in Langley's Spin Tunnel confirmed that, properly "loaded," the plane is virtually impossible to spin.

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Its unique configuration, a combination of canard and narrow, swept main wing with vertical "winglets" at the wing tips, has a built-in resistance to aircraft stalling or spinning. Winglets, an invention of Langley's Dr. Richard Whitcomb, have already proven to be a fuel-efficient concept.

Another series of tests, however, revealed a problem already experienced by several VariEze owners under certain specific conditions that can result in a lateral stability problem. In "free-flight" tests in Langley's 9-by-18-meter (30-by-60-foot) Wind Tunnel, at low speeds and with the nose high, a model flew with a violent rolling oscillation, or wing rock. After study, researchers solved the problem with a simple modification of the main wing. Burt Rutan, the creator of the VariEze, immediately conducted a full-scale flight test with a modified wing, found it had indeed solved the problem and promptly recommended the change to all VariEze owners.

The last phase of wing tunnel testing planned for the VariEze has recently been completed in the wind tunnel. A full-scale VariEze, built in Langley's model shop, contributed detailed data about the complicated relationship of canard and wing placement, and their thickness and shape.

"We're also correlating this experimental wind tunnel work," Chambers says, "with computer codes to predict flight characteristics and hope, ultimately, to end up with a 'cookbook' for designers which can be used to quickly and easily design advanced configurations."

Joe Johnson, head of Langley's Dynamic Stability Branch, points out that "we're really documenting the flight characteristics of an airplane already successfully flying (the VariEze).

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Once we understand the reason for these things, then we'll know how to apply the answers to something else. There may be more to it than is obvious."

Johnson adds that one reason for the tests is to document the airplane's aerodynamic efficiency -- which is considerable -- without specifically trying to improve it. The airplane is exceptionally streamlined and lightweight, making use of foam sections covered with a seamless, lightweight composite material much like fiberglass. Advanced construction techniques is another area NASA will investigate in its light plane research.

The VariEze tests began more than two years ago when Langley research pilots Jim Patton and Phil Brown put the plane through its paces at the designer's facility in the Mojave Desert.

"We performed a qualitative but pretty accurate evaluation of the VariEze's handling qualities, as good as possible without test instruments," recalls Patton, "and we thought its built-in resistance to stall very impressive."

One negative characteristic obvious to anyone who has flown the plane is that the canard is attached in a position that somewhat reduces pilot visibility during takeoff and landing. VariEze wind tunnel data, still being analyzed, is expected to determine whether the canard can be placed lower on the fuselage, more out of the pilot's sight, without sacrificing its excellent flight safety qualities.

NASA plans to continue tests with twin-engine versions of the VariEze configuration and other unusual canard designs, including possible canard application to larger aircraft such as commuters.

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(NOTE: NASA-LANGLEY PHOTOS L-81-7332 AND L-81-7334 ARE AVAILABLE TO ACCOMPANY THIS RELEASE AND WILL PROVIDED BY PHONING KEITH HENRY AT 804 827-2934. PLEASE SPECIFY BLACK AND WHITE OR COLOR.)

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For Release:
October 9, 1981

RELEASE NO. 81-76

SEVAREID TO SPEAK AT HAMPTON COLISEUM

Hampton, Va.--For 40 years Eric Sevareid has reported, summarized and analyzed American and world history as a correspondent for CBS news. As the nation embarks on the first evening of its third century, Eric Sevareid is well qualified as one of the world's premier journalists to speak about the past, the potential and the prospects of the American experience.

As part of America's Yorktown Victory Bicentennial Celebration, Sevareid will be the guest speaker for the "Our Future in the Cosmos" public lecture Monday, October 19, at 8 p.m. in Hampton Coliseum.

Sevareid's lecture, "An Evening with Eric Sevareid," will be the first lecture in the 1981-82 Cosmos series, sponsored by NASA and the College of William and Mary. Free tickets are available at the Coliseum box office.

In preparation for the Bicentennial and for his visit to the Peninsula, Sevareid issued the following statement: "A few days in October of 1781 made it certain that a new nation would be born into the world. The certainty did not come with the words of Jefferson in 1776, but with the carefully planned acts of violence at Yorktown in 1781. A long time ago, but to most of us America still feels fairly new. Not as new as it did, but not yet old and set in its ways.

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October 8, 1981

It seems to me that the United States has reached what one might, not too fancifully, call middle age. The country is reexamining itself, as persons do at middle age, recognizing its inherent faults and its limitations, reaffirming its strength, beginning to distinguish more clearly those ills of humanity that it can help to cure from those it cannot, realizing that it is not required that a man or a nation solve all problems to live successfully. Amelioration of human ills is the best we can look for. To do that is to live successfully and this nation has lived its 200 years most successfully. As Harry Golden said, 'America ain't what's wrong with the world' -- and it never was."

Sevareid, best know for his news analysis on the CBS Evening News, joined the Columbia Broadcasting System in August 1939 asa member of the original news ^{staff?} assembled by the late Edward R. Murrow.

In over four decades as a newsman, Sevareid has been a war and foreign correspondent, radio news broadcaster, television commentator and columnist, as well as a newspaper reporter and editor. He was regularly involved in CBS News coverage of major political events from 1948 until his recent retirement.

Sevareid has received numerous awards for his writing, broadcasting and interpretation of the news, such as the Peabody Award, an Emmy Award by the National Academy of Television Arts and Sciences, the University of Southern California's Distinguished Achievement of the Year Award and the National Institute of Social Sciences Gold Medal Award. He was inducted into the Hall of Fame of the Washington Chapter of the Society of Professional Journalists, Sigma Delta Chi, in 1974.

He is the author of two books, "Canoeing With the Cree" and "Not So Wild A Dream" and three collections of broadcast essays: "In One Ear," "Small Sounds In the Night" and "This is Eric Sevareid." He also edited "Candidate: 1960" and co-authored, with Robert Smith, "Washington: Magnificent Capital."

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Reflecting on his years with CBS News, Severeid expressed what it means to be a journalist:

"Only one commitment, one passion, remains to a journalist who loves and respects his profession and his colleagues--to find the truth of things as best he can and to relay it with what skill he can command."

NOTE TO EDITORS

Severeid will be the guest speaker at a Langley colloquium the next morning, October 20, in the Activities Center, Building 1222. A news briefing will be held at 9 a.m., and the lecture will begin at 10 a.m.

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RELEASE NO. 81-77

ROWE NAMED ASSISTANT DIVISION CHIEF AT NASA-LANGLEY

Hampton, Va.--Mickey G. Rowe has been selected Assistant Chief of the Analysis and Computation Division at NASA's Langley Research Center. He is former Head of the Computer Systems Branch of that organization.

Rowe will share responsibility for the development and application of techniques and equipment needed to meet Langley's research computing requirements in analytical and design studies, real-time simulation and experimental data reduction.

Rowe began his Langley career in February 1961 as an aerospace technologist. He became Assistant Head, Computer Systems Branch, in March 1977 and Head in September 1977.

He served in the U.S. Marine Corps from 1954 to 1957.

Born in Mississippi, Rowe received a bachelor of science degree in mathematics from Louisiana Polytechnic Institute in 1961.

Rowe received a Group Achievement Award, presented to the Digital Computer Complex Group, in 1968; a Special Achievement Award for exceptional service in 1968; and a Group Achievement Award, presented to the STAR Software System Project Team, in 1976.

Rowe and his wife, Betty, live in Hampton, Va. They have a daughter and three sons.

October 16, 1981

NASA News

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RELEASE NO. 81-78

NASA-LANGLEY APPRENTICES TO GRADUATE

Hampton, Va.--Twenty-six Langley Research Center apprentices will receive their journeyman certificates Friday, October 23, at the 37th Annual Completion Exercise for Engineering Technicians.

The ceremony will begin at 1:30 p.m. in the Activities Center, Building 1222.

Dr. Jean M. Epps, Director of Vocational Education, Newport News Public Schools, will be the keynote speaker.

Donald L. Smith, Engineering Technician in the Fabrication Division, will be the speaker for the Class of 1981 and John C. Covington, Administrator of the Apprentice Program, will present the certificates. Special music will be provided by members of the Denbigh High School Band.

The 1981 class is the first to enter the apprentice program with advanced standing (i.e., at least two years of post-high school study, with emphasis in mathematics and science).

The graduates and their trades are:

Electrical Engineering Technicians, Operations Support Division: James F. Allen, Vernet P. Boone, Reginald T. Brown and Alan W. Henderson.

Engineering Technicians (Materials Processes), Fabrication Division:
Bruce L. Bishop and Charles H. Greenhalgh, Jr.

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October 16, 1981

Engineering Technicians (Research Facilities Operations), Operations Support Division: Gerald D. Boggs; John E. Brown; William Gray, Jr.; Ricky L. Hall; Nicholas A. Kepics; Janice L. McCollum; Bryan S. Pierce; Carlton G. Pike; Janice Y. Smith; David A. Sothcott; Mark A. Spiers; Leonard R. Stevens; and Oletha B. White.

Engineering Technician (Mechanical Development), Operations Support Division: Frank L. Boyer.

Engineering Drafter, Plant Engineering Division: Guy M. Brice.

Engineering Technicians (Aerospace Model Development), Fabrication Division: Benjamin F. Guether; William D. Lupton; and Donald L. Smith.

Aerospace Engineering Technician, Low-Speed Aerodynamics Division: James M. Hassell.

Electronics Technician, Fabrication Division: Arthur R. Hayhurst.

Epps began her career as an educator in 1954 with the York County Public Schools, where she taught business education, English and history. She taught distributive education in the Newport News Public Schools from 1964 to 1969 and at Virginia Commonwealth University in Richmond from 1969 to 1974. She has held her present position since 1976.

She received a bachelor of science degree in business education from Virginia State College in 1954, a master of science degree in distributive education from Virginia Commonwealth University in 1970 and a doctorate in curriculum and instruction from the University of Virginia in 1976.

Epps is a member of many local, state and national councils for vocational education and administrators, and she is President of the Virginia Association of Vocational Administrators. She is co-director for two state-funded projects, one for the Newport News Public Schools and one involving five school divisions, a vocational-training center and a community college. She helped revise a series

of marketing textbooks for McGraw-Hill Book Company in 1975 and was a proposal evaluator for the U.S. Office of Education, Adult, Vocational and Technical Education Division, in 1976 and 1980. Since 1978 she has served on the State Department of Education's Steering Committee for the Articulation of Secondary and Community College Vocational Education Programs.

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RELEASE NO. 81-79

NASA HONORS EMPLOYEES AT AWARD CEREMONY

Hampton, Va.--NASA will honor employees who have made outstanding contributions in aeronautical and aerospace research during the past year at the Annual Honor Awards Ceremony at the Langley Research Center Thursday, October 29.

Robert E. Sperry, Regional Director, Mid-Atlantic Region, Office of Personnel Management, will be the guest speaker for the ceremony, which will begin at 1:30 p.m. in the Activities Center, Building 1222.

NASA awards will be presented to the following:

Outstanding Leadership Medal: Albert E. Gribble and Robert W. Leonard.

Exceptional Scientific Achievement Medal: Dennis M. Bushnell, Frank Hohl and James C. Newman, Jr.

Exceptional Engineering Achievement Medal: Sumner A. Leadbetter and Robert T. Wingate.

Equal Opportunity Medal: Donald P. Hearsh

Exceptional Service Medal: Joseph R. Chambers, Barbara W. Hogge, Everett C. Johnson, Harvey G. McComb, David G. Stephens and Jerry C. South, Jr.

Group Achievement Award: Solar-Pumped Laser Research Team.

Langley awards will be presented to the following:

H.J.E. Reid Award: T. Dale Bess, Richard N. Green and G. Louis Smith.

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October 23, 1981

Thirty Group Achievement awards will also be presented.

Regional Director since 1975, Sperry manages the region which has jurisdiction over federal personnel management matters in Pennsylvania, Delaware, Maryland, West Virginia and Virginia. The responsibilities include all facets of personnel management such as compensation, staffing, labor relations, training, productivity, evaluation, position management and personnel investigations.

He is former Deputy Director of the U.S. Civil Service Commission's Recruiting and Examining Bureau in Washington, D.C.

Sperry joined the Civil Service Commission in 1959 and held several posts in various CSC offices. He was assigned to the Office of Personnel and Training Federal Aviation Agency, from 1963 to 1964, working on a Career Planning Program.

Sperry received a bachelor of science degree in political science and history from Washburn University, Topeka, in 1952, a Doctor of Jurisprudence degree from the University of Missouri at Kansas City Law School in 1961.

He joined the U.S. Army in 1952, attending Leadership School and OCS, and served with the Fourth Division Engineers.

Sperry is Co-adjutant Associate Professor in the University College Management Department of Rutgers University and Co-adjutant Assistant Professor in the Graduate School of Public Administration, Temple University, Philadelphia. He has been a guest lecturer at several colleges and universities.

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Jean Drummond
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For Release:
On Receipt

RELEASE NO. 81-80

LANGLEY HOSTS SYMPOSIUM ON COMPUTATIONAL ASPECTS OF HEAT TRANSFER IN STRUCTURES

Hampton, Va.--A symposium on Computational Aspects of Heat Transfer in Structures will be held at NASA's Langley Research Center November 3-5. The symposium, sponsored by George Washington University, Old Dominion University and Langley, will be held in the Activities Center, Building 1222.

Approximately 125 representatives of universities, private companies and government agencies are expected to attend the three-day symposium to discuss recent progress in efficiently calculating the temperatures and thermal stresses in complex structures, with emphasis on re-entry flight vehicle structures.

Thirty papers will be presented during the symposium, some dealing directly with predicting the temperature fields in portions of the Space Shuttle Orbiter during its first flight.

The symposium includes sessions on computer programs for thermal analysis, advancements in analysis techniques, thermal analysis of large space structures, thermal analysis of high-speed vehicles and impact of new computer systems.

Richard R. Heldenfels, former Director for Structures and now a Distinguished Research Associate at Langley, will give a special lecture, "Historical Perspectives on Structural-Thermal Technology," November 4. A panel discussion, moderated by Sidney C. Dixon, Chief of the Loads and Aeroelasticity Division, will be held

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October 26, 1981

November 5. The five panelists will discuss "Concerns, Issues, and Future Directions."

The symposium is being coordinated by Dr. Howard M. Adelman, general chairman. There will be a registration fee of \$15 to cover expenses for refreshments. For more information, Call Dr. Adelman, 827-3451.

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For Release:
November 3, 1981

RELEASE NO. 81-96

DUNBAR ADDRESSES LANGLEY EMPLOYEES

Hampton, Va.--Astronaut Bonnie Dunbar will speak to Langley employees Thursday, November 12, on "Space Shuttle: The Future is Here." Her lecture will begin at 8:45 a.m. in the Activities Center, Building 1222.

Dunbar was one of 11 mission specialist candidates selected from 2,880 applicants in 1980. After completing a year of intense training at NASA's Johnson Space Center, Houston, she was recently selected as an astronaut (mission specialist).

Dunbar began her NASA career as a payload officer/flight controller at Johnson in 1978. She was a guidance and navigation officer/flight controller for the Skylab reentry mission in 1979, and was subsequently designated project officer for the integration of several Space Shuttle payloads.

After graduation from the University of Washington in 1971, Dunbar was a systems analyst for Boeing Computer Services. In 1973 she was awarded a NASA grant and started research for her master's thesis on mechanisms and kinetics of ionic diffusion in sodium beta-alumina. She graduated cum laude from the University of Washington in 1975.

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November 2, 1981

That same year, Dunbar was invited to Harwell Laboratories in Oxford, England, as a visiting scientist to conduct research on the wetting behavior of liquids on solid substrates. Upon her return to the United States, she became a senior research engineer at Rockwell International, Space Division, Downey, Calif., where she developed equipment and processes for the manufacture of the Space Shuttle's thermal protection system. She represented Rockwell as a member of the Dr. Kraft Ehricke Evaluation Committee on prospective space industrialization concepts.

Dunbar's visit to the Peninsula is in commemoration of Work of Women Week, November 8-14, sponsored by the Women in Business Program at the College of William and Mary, the Junior League of Hampton Roads and the Peninsula Women's Network, Inc. Dunbar will give the same lecture Wednesday, November 11, at Bethel High School at 8 p.m.

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For Release:
November 3, 1981

RELEASE NO. 81-97

BROADWATER TO SPEAK AT NASA-LANGLEY COLLOQUIUM

Hampton, Va.--Because of the hostile environment encountered when investigating underwater archaeological sites, special methods must be used to permit underwater archaeologists to locate, identify, excavate and preserve the submerged cultural resources.

The special methods, and the role that science and engineering play in this effort, will be discussed by Dr. John Broadwater at a colloquium, Monday, November 9, at NASA's Langley Research Center. Broadwater is Senior Underwater Archaeologist for the Virginia Historic Landmarks Commission's Research Center for Archaeology in Yorktown.

Broadwater's lecture, "Development of an Underwater Archaeology Program for Virginia," will begin at 2 p.m. in the Activities Center, Building 1222. A news briefing will precede the lecture, beginning at 1:15 p.m.

The Commission's Research Center for Archaeology is implementing a comprehensive plan for underwater archaeology, including extensive documentary research, personal interviews, and field investigations, according to Broadwater. The center's work is supported by electronic remote sensing instrumentation, computer analysis and engineering measurement techniques.

Broadwater, who also directs the Yorktown Shipwreck Archaeological Project,

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November 2, 1981

said that next year, funds permitting, the Commission will construct a steel enclosure, or cofferdam, around a well-preserved shipwreck from the Battle of Yorktown, 1781, to improve excavation conditions. The enclosed water will be filtered to improve visibility, and a pier will be constructed from the nearby shoreline to permit visitors to observe the excavations.

Broadwater received a bachelor of science degree in electrical engineering from the University of Kentucky in 1966 and worked for six years as a radar engineer. During this time he was stationed for two years on Kwajalein Atoll in the Marshall Islands of Micronesia, where he investigated and photographed sunken Japanese ships. This project resulted in his book, "Kwajalein, Lagoon of Found Ships."

From 1973 to 1975, as Vice-President and co-founder of Marine Archaeological Research Services Corporation, he participated in searches for the ironclad warship USS Monitor and a search for ancient shipwrecks along the southern Turkish coast, a project of the American Institute of Nautical Archaeology. He was a member of the archaeology team aboard the R/V Alcoa Seaprobe in 1974 when the identity of the wreck of the USS Monitor was verified off the coast of North Carolina. From 1975 to 1976 he helped survey Revolutionary War shipwrecks in the York River and in the Mullica River in New Jersey.

After first serving as a consultant to the Virginia Research Center for Archaeology, he accepted a position in 1978 as Underwater Archaeologist, where he directed a one-year survey for shipwrecks associated with the Battle of Yorktown in 1781. In addition to the York River Shipwreck Project, he will attempt to develop a program of identifying submerged cultural resources in Virginia.

Broadwater is a certified Marine Survey Archaeologist with the Society of Professional Archaeologists.

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For Release:
November 9, 1981

RELEASE NO. 81-98

THIRD ANNUAL LSST REVIEW PLANNED AT NASA-LANGLEY

Hampton, Va.--The Third Annual Large Space Systems Technology Review will be held at NASA's Langley Research Center November 16-19.

Representatives from universities, private industry and government agencies are expected to attend the meeting at the Langley Activities Center, Building 1222, to discuss progress and accomplishments in the past year in large space systems technology development.

Over 50 papers will be presented during the four-day meeting, dealing with basic structures and materials to large communication antenna systems. Papers presented the first day will cover structures, materials and analysis of software systems; the second day will cover the control of large systems; the third day will cover large antenna systems, including electromagnetic considerations; and the last day will deal with program status and flight experiments.

There will be a structured forum following each day's session, led by invited panelists, with speakers and attendees participating.

The meeting is being coordinated by William J. Boyer. For more information and a detailed agenda, call Boyer, 827-3661, or Carol Johnson, 827-3968. There will be a \$15 registration fee to pay for refreshments for non-NASA Langley attendees.

November 5, 1981

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For Release:
November 6, 1981

RELEASE NO. 81-99

STICKLE SELECTED DIVISION CHIEF AT NASA-LANGLEY

Hampton, Va. --Joseph W. Stickle has been selected to head the Low-Speed Aerodynamics Division at NASA's Langley Research Center in Hampton. He is former Acting Chief of that organization.

Stickle is responsible for the division that plans, develops and conducts analytical, wind tunnel and flight research programs on aeronautical technology, with emphasis on subsonic aerodynamics, flight dynamics, operating efficiency and flight environment. The division maintains and operates the center's fleet of 18 research and support aircraft and manages the operation of the 4-by-7 Meter Tunnel, the Full-Scale Tunnel, the Spin Tunnel and the Vortex Research Facility.

Stickle joined the Langley staff in July 1959 as an engineer, conducting research in aircraft operating problems, including runway roughness, aircraft landing contact conditions, clear air turbulence, flight path control, aircraft trailing vortices and fuel reserve requirements for advanced aircraft.

In 1970 Stickle was selected to represent NASA on the Aeronautics Staff of the National Aeronautics and Space Council, where he worked on national aeronautical programs, policies and problems.

He returned to Langley in July 1971 as Technical Assistant to the Director for Aeronautics, assisting in planning, coordinating and evaluating aeronautical

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November 5, 1981

and aerospace research programs. In 1972 he became Assistant Head of the Airworthiness Branch, Research Aircraft Flight Division, responsible for the center's general aviation program, covering aerodynamics, structures, avionics, propulsion, noise and human factors, and research on accelerated breakup of aircraft trailing vortices.

Stickle became Assistant Chief of the Flight Research Division, now the Low-Speed Aerodynamics Division, in September 1973, where he was active in formulating and directing flight research programs for rotary wing, V/STOL, fighter, transport and general aviation aircraft, and responsible for coordinating Langley programs in general aviation and aircraft trailing vortices. He was named Acting Chief in November 1980.

Before joining NASA, Stickle served in the U.S. Army Signal Corps from 1955 to 1957.

A native of Hampton, Va., Stickle received a bachelor of science degree in physics from Wofford College in Spartanburg, S.C., in 1959.

The author or co-author of 21 technical publications, Stickle is a member of the American Institute of Aeronautics and Astronautics. He holds a patent for a slot-spoiler direct-lift control system for light aircraft.

Stickle and his wife, the former Peggy Darnell, live in Hampton with their three children.

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For Release:
November 19, 1981

RELEASE NO. 81-100

MORIN SELECTED DIVISION CHIEF AT NASA LANGLEY

Hampton, Va.--Maurice K. Morin, Acting Chief of the Analysis and Computation Division at NASA's Langley Research Center has been selected Chief of that organization.

Morin is responsible for the development and application of techniques and equipment needed to meet Langley's research and computing requirements in analytical studies, real-time simulation and data reduction.

Morin began his career with NASA's predecessor agency, the National Advisory Committee for Aeronautics, in June 1955 as an aerospace technologist in the Instrument Research Division. He was named Head of the Programing Techniques Section of ACD in 1962; Head of the Programing Techniques Branch in 1966; and Project Manager of the Star Project Office in 1972. In 1975 he was named Assistant Chief of ACD, where he was responsible for providing center-wide analysis and computational support in the areas of analytical computing, research data reduction and digital flight simulation. He became Acting Chief in August 1981.

Before joining Langley, Morin was employed as a part-time billing clerk at St. Johnsbury Trucking Company in Cambridge, Mass. He served in the U.S. Army for

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November 17, 1981

six months in 1957 as a First Lieutenant.

A native of Massachusetts, Morin graduated from Boston English High School in Boston in June 1951. He received a bachelor of arts degree in mathematics in 1955 from Boston University.

He received Langley Group Achievement Awards in 1968 and 1976, a Langley Exceptional Scientific Achievement Award in 1968, and a NASA Medal for Exceptional Scientific Achievement in 1970.

Morin and his wife, Norma, live in Williamsburg, Va. They have four children.

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November 19, 1981

RELEASE NO. 81-101

CLARK, WINGATE NAMED TO SENIOR EXECUTIVE SERVICE POSITIONS AT NASA LANGLEY

Hampton, Va.--Two Langley managers have been selected for Senior Executive Service positions in the Systems Engineering and Operations Directorate at NASA's Langley Research Center.

Hubert K. Clark is Assistant Director for Systems Engineering and Operations and Dr. Robert T. Wingate is Chief of the Systems Engineering Division.

Clark provides general direction to the overall technical operations and activities of the directorate. He plans, directs, coordinates and integrates the highly specialized technical and engineering services provided by three engineering divisions, two technical support divisions and two staff offices in support of Langley aerospace and aeronautics research. He establishes and maintains close liaison with NASA program offices, Langley research directorates and divisions to achieve a thorough knowledge of NASA research programs and the part Langley plays in the technical support of these programs.

Clark began his government career with NASA's predecessor agency, the National Advisory Committee for Aeronautics, in May 1952 as a mechanical engineer. In July 1972 he was named Chief of the Systems Engineering Division, where he

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November 17, 1981

administered and technically directed approximately 160 multi-discipline engineers and engineering technicians in the design, analysis, testing, integration and flight operations in support of Shuttle payloads, pollution measurement instruments, spacecraft, research aircraft models, full-scale aircraft systems and subsystems and analytical support to facility design.

Prior to joining the Langley staff, Clark was a power plant engineer in Goldsboro, N.C., and a mechanical engineer (design) in Knoxville, Tenn. He served in the U.S. Navy from July 1943 to August 1946.

Clark received a bachelor of science degree in mechanical engineering from Duke University.

He has received the NASA Exceptional Service Medal, a NASA Special Achievement Award for contributions and several Group Achievement Awards. He holds a patent for a Thermal Pump-Compressor for space use.

Clark and his wife, Georgia, live in Newport News. They have two sons and a daughter.

Wingate provides technical and administrative direction of a highly diversified engineering organization having responsibility for advancing and applying engineering technology to the design, development, and manufacture of aeronautical and space flight systems and ground-related facilities in the aerospace field.

Wingate began his NASA career in September 1959 as a mechanical equipment design engineer. He was named Head of the Flight Dynamics Section of the Flight Vehicles and Systems Division in June 1968 and Head of the Engineering Analysis Branch of the Systems Engineering Division in March 1971. In September 1979, he became Assistant Chief of the Systems Engineering Division, helping manage the division responsible for the mechanical, electrical and systems engineering functions

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required to provide research facilities and flight hardware for aerospace research, applications and technology development programs. He became Acting Chief in August 1981.

Before joining the Langley staff, Wingate was an analytical design engineer at Pratt and Whitney Aircraft Company in West Palm Beach, Fla., from September 1958 to March 1959. He was an officer in the U.S. Army Signal Corps from March 1959 to September 1959.

A native of Alabama, Wingate received a bachelor of science degree in mechanical engineering from Auburn University in 1958. He earned a master of science degree in mechanical engineering from the University of Virginia in 1964 and a Ph.D degree in engineering mechanics from Virginia Polytechnic Institute and State University in 1971.

The author or co-author of 14 technical publications, Wingate has received three Group Achievement awards and three Outstanding Performance awards.

Wingate and his wife, Audrey, live in Hampton with their son and daughter.

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RELEASE NO. 81-105

MODERN MACHINE & TOOL COMPANY SELECTED FOR NASA CONTRACT

Hampton, Va.--Modern Machine & Tool Company, of Newport News, Va., has been selected for negotiation leading to award of a NASA contract for force and strain measuring instrument support services. Typically, force and strain measurements are an integral part of wind tunnel and other testing.

The cost-plus-fixed-fee contract, valued at approximately \$3.2 million, includes the personnel, equipment, materials and facilities necessary to perform engineering design studies and the fabrication, calibration, installation, maintenance and repair of force-measuring transducers and related accessories.

The three-year contract will be managed by NASA's Langley Research Center, Hampton, Va. The contract work is in support of Langley test facilities.

--End--

November 25, 1981

NASA News

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11/25/81

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RELEASE NO. 81-106

JOHNSON NEW INSTRUMENT RESEARCH DIVISION CHIEF AT NASA LANGLEY

Hampton, Va.--David R. Johnson, Acting Chief of the Instrument Research Division at NASA's Langley Research Center, has been selected as Chief of that organization. Johnson is responsible for planning and implementing a broad instrument research, development and application program to support Langley's present and future measurement requirements.

Johnson joined the Langley staff in 1953 as an engineer in IRD where he conducted research in aeronautical instrumentation. He became Head of the division's General Mechanical Instrumentation Section in 1959 and Head of the Electro-Mechanical Instrumentation Branch in 1963.

In 1974 he became Technical Assistant to the Director for Electronics, helping manage a wide variety of activities in electronics for aeronautical and space applications; computation and simulation; and research facility instrumentation. In February 1981, he was named Acting Chief of IRD.

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November 25, 1981

Before joining NASA, Johnson served in the U.S. Air Force from 1951 to 1953 and in the U.S. Navy from 1944 to 1947.

A native of Hampton, Johnson graduated from Hampton High School in 1943. He received a bachelor of science degree in mechanical engineering from North Carolina State University in 1951.

Johnson and his wife, Nancy, live in Newport News. They have two children.

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RELEASE NO. 81-107

GEER TO LEAVE NASA-LANGLEY

Hampton, Va.--E. Barton Geer, longtime Director for Systems Engineering and Operations and, for the past three months, Special Assistant to the Acting Director of that organization, will leave NASA's Langley Research Center December 11.

Director for Systems Engineering and Operations from April 1972 to September 1981, Geer managed the activities of five divisions: Fabrication, System Engineering, Research Facilities Engineering, Operations Support and Plant Engineering.

He was responsible for engineering, design and construction of the \$85 million National Transonic Facility, a national test facility employing the cryogenic concept to achieve high Reynolds numbers at transonic speeds to serve the needs of NASA, DOD, the aircraft industry and the university community.

He also provided the engineering leadership and was responsible for the construction of the new \$10 million Refuse-Fired Steam Generating Facility, a joint project involving NASA, the City of Hampton and the Air Force to help solve local refuse problems as well as to save energy.

Geer joined the Langley staff in May 1942 as a mechanical engineer and in October 1954 was named Head, Systems Engineering Section. In July 1960 he became Head, Systems Engineering Branch, Engineering Services Division; in May 1962

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December 2, 1981

Associate Chief of the Flight Vehicles and Systems Division; and in June 1965 Chief of FVSD, subsequently renamed Systems Engineering Division. He was Spacecraft Manager for the Viking Project from November 1969 to April 1972.

Geer is a recognized expert in the field of engineering and systems integration of flight vehicles and has served as a consultant to NASA and to private industry. He has served as chairman or as a member of many committees and panels concerned with the reliability, compatibility and engineering of flight vehicle systems.

In 1967 Geer was a member of the seven-man Apollo 204 Review Committee which reviewed the most probable cause of the accident that took the lives of three astronauts at the Kennedy Space Center.

In 1969 he participated in the Operational Readiness of the Manned Spacecraft Center's Lunar Receiving Laboratory which received samples of all lunar material from the moon's surface.

In 1971 he was appointed a member of a technical team to review the Apollo and Skylab systems to determine adequacy and verification of design of all systems of Saturn V launch vehicle, lunar excursion module, command module, and the experiments.

In September 1974 Geer was detailed for three months to the Viking Project as a Special Assistant for Viking Lander components. He was responsible for assuring that hardware was delivered from various companies in the United States to Cape Kennedy for assembling and testing as a complete system.

Geer served on a NASA Safety Review Panel, reviewing and enhancing overall personnel and program safety as well as operational efficiency of the Solid Rocket Motor Assembly in the Vertical Assembly Building at the Kennedy Space Center. As a member of NASA's Operations and Engineering Panel, he participated

in a technical safety review of modifications to the 40- by 80-Foot Subsonic Wind Tunnel at the Ames Research Center in California.

Geer has received a NASA Exceptional Service Medal, a NASA Outstanding Leadership Medal and a Langley Special Achievement Award. He was named Engineer of the Year by the American Institute of Aeronautics and Astronautics in 1980.

A native of Rockwell, Iowa, Geer received a bachelor of science degree in mechanical engineering from Iowa State College in Ames in 1942.

A registered professional engineer in Virginia, Geer is a member of the Engineers' Club of the Virginia Peninsula, the AIAA, the AIAA Design Engineering Technical Committee and is Chairman of the Hampton Planning Commission. He was appointed to the Industrial Advisory Group and the Electric Utilities Advisory Group for the Commonwealth of Virginia by the Director of the Virginia Energy Office in 1976.

Geer and his wife, Beverly, live in Hampton, Va.

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RELEASE NO. 81-108

HAIT TO SPEAK AT NASA-LANGLEY COLLOQUIUM

Hampton, Va.--The catastrophic eruption of Mount St. Helens, May 18, 1980, captured the attention of the world and has brought into focus the potential volcanic risk to vast areas and to thousands of people and their technological society.

Dr. Mortimer "Tim" H. Hait of the U.S. Geological Survey in Denver will give a slide presentation at a Langley colloquium Monday, December 14, in the Activities Center, Bldg. 1222. Hait's lecture, "Mount St. Helens--Surprise, Surprise," will begin at 2 p.m., preceded by a news briefing at 1:15 p.m.

The slides will show the precursory steam eruptions and ominously growing bulge; the events of May 18, including a series of eruption photographs; the immediate results of the blast damage; the landslide and flood; the ash fall and associated problems; and the follow-on lava dome growth.

Hait said the eruption was small on a geological scale and "we are instantly impressed by how small and fragile we and our technological society are. This kind of perspective of ourselves

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December 2, 1981

increased the size and kind of fears, such as: are the volcanoes interconnected; will there be a fire-cracker effect; and what about all the dire predictions?"

"And amid it all," Hait added, "there is humor: T-shirts, ash trays, schemes to shut down the volcano, and Captain Volcano. At the bottom line, "Hait concluded, "Mount St. Helens is an education--about our world and about ourselves."

Hait, a geologist with the U.S. Geological Survey since 1966, has conducted structural and mapping studies in east central and southern Idaho; geologic evaluation of potential nuclear facility sites; volcanic hazard studies of Washington, Oregon and California; and was a spokesman at Mount St. Helens.

He worked on the USGS Astrogeology Program in Flagstaff, Ariz., from 1966 to 1973 and trained astronauts in lunar geological methods for Apollo 11-17 at the Johnson Space Center. He was a geologist for Texaco, Inc., in Casper, N.Y., from 1963 to 1965.

Hait received a bachelor's degree in geology from Lafayette College, Easton, Pa., in 1955 and a doctorate in geology from Pennsylvania State University, University Park, Pa., in 1965.

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For Release:
December 4, 1981

RELEASE NO. 81-110

KENTRON DIVISION AWARDED CONTRACT MODIFICATION BY NASA LANGLEY

Hampton, Va.--The Hampton Technical Center, a division of Kentron International, Inc., of Dallas, Tex., has been awarded a \$1.1 million contract modification by NASA's Langley Research Center. The modification increases the support provided for aerospace research and technology programs.

Areas receiving the additional support provided by the modification include electronic systems research, scientific computer analysis, environmental research, structures and materials, theoretical aerodynamics and aircraft noise analysis.

The basic contract was awarded October 1, 1979, for approximately \$26.2 million.

Most of the work will be done at the Hampton Technical Center, with certain special tasks done at Langley.

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December 4, 1981

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RELEASE NO. 81-111

NOTE TO EDITORS

Following is based on an abstract of a paper entitled "Passive Microwave Measurements of Salinity on the Surface of the German Bight" by Dr. Hans-Juergen C. Blume, researcher at NASA's Langley Research Center, Hampton, Va. The paper was presented at a meeting of the American Geophysical Union, Dec. 7-11, in San Francisco.

NASA PROVES SYSTEM FOR REMOTE MAPPING OF OCEAN SALINITY

Using state-of-the-art radiometers, NASA researchers have demonstrated a technique to measure sea-surface salinity remotely from the air. The dual-frequency microwave radiometer system was developed at NASA's Langley Research Center and is accurate in its measurements of ocean salinity to one part per thousand.

The same system was previously shown capable of remote measurements of sea surface temperature to accuracies of one degree Celsius.

Langley's Dr. Hans-Juergen C. Blume reported at the fall American Geophysical Union Meeting in San Francisco, Dec. 7-11, that valuable salinity maps can be measured remotely from the air in a considerably shorter time than with maritime vessels. This was proven by the use of the Langley radiometer system during the 1979 Maritime Remote Sensing (MARSEN) experiment, conducted over the North Sea in the area of the German Bight.

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December 10, 1981

This improvement offers the possibility of obtaining quasi-synoptic overviews of fast-changing conditions in estuaries. Blume's synoptic overview is a scientific snapshot of conditions as they exist simultaneously over a broad area.

In spite of radio interference from radars, microwave buoys and microwave relay links in the overflight area, meaningful results were produced that correlated closely with measurements from the sea-going ship William Pullwer.

Blume concluded that to make detailed sea temperature contour maps in an area such as the German Bight a more dense flight pattern and an absence of radio frequency interference are required.

Measurements of coastal zone ocean temperature and salinity have proven useful, in the past, for studying circulation in bay areas and tracing river outflow.

Also important is the location of ocean fronts, or areas where temperature or salinity changes rapidly from one area to the next. Ocean fronts first become important to the ocean community because sonar transmissions are distorted and disrupted at these locations.

The remote detection of ocean fronts was a NASA objective during the MARSEN experiments, conducted from Aug. 30 to Sept. 23, 1979. The ocean front work included the NASA L- and S-band radiometer on board a NASA P-3 aircraft. Surface temperature and salinity measurements were concentrated in the freshwater outflows of the rivers Weser and Elbe in the German Bight.

The NASA dual-frequency microwave radiometer system can take measurements over a wide range of environmental conditions, including cloudy and hazy days and at night, increasing the opportunity for monitoring coastal zones and estuaries.

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RELEASE NO. 81-112

NOTE TO EDITORS

Following is based on an abstract of a paper entitled "Effect of Changes in Ozone, Solar UV Flux, and Solar Constant on Stratospheric Zonal Temperature and Wind Fields" by Linwood B. Callis, researcher at NASA's Langley Research Center, Hampton, Va. The paper was presented Dec. 8 at a meeting of the American Geophysical Union, San Francisco.

ANOTHER POTENTIAL EFFECT OF THE CHLOROFLUOROMETHANES

The effect of releases of chlorofluoromethanes (CFM's) to the atmosphere has been under study for the past six years. Scientists fear that given the present release rates of CFM's, concentrations in the upper atmosphere may grow.

If this happens, chlorine would be released which may destroy a significant amount of the Earth's protective ozone shield. This shield is necessary to protect life forms from the damaging effects of solar ultraviolet radiation. In addition, the presence of an increased level of the CFM's in the lower atmosphere may enhance the Earth's "greenhouse effect," leading to surface temperature increases and possibly causing undesirable climate effects.

Linwood B. Callis of NASA's Langley Research Center reported at the fall American Geophysical Union meeting in San Francisco, Dec. 7-11, preliminary work which suggests that ozone destruction caused by CFM's may cause significant changes to distribution of wind fields in the upper atmosphere over the next 30 years,

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December 10, 1981

assuming that present release rates are maintained.

Callis' work suggests that, due to ozone reductions, the wintertime equatorial stratospheric temperatures will be reduced seven to nine degrees Celsius while the temperatures over the North Pole will be slightly increased. As a result, the stratospheric equator-to-pole temperature gradient will be flattened by 20 to 30 percent, leading to a reduction of stratospheric westerly winds by as much as 25 percent.

For the summertime stratosphere, Callis' work suggests temperature reductions at all latitudes in the northern hemisphere. The nature of these variations suggest a significant decrease in the easterly winds in the summertime equatorial stratosphere.

At first glance, such changes may appear to be of only passing interest since the large changes occur 25 miles above the surface of the Earth. Callis points out, however, that the strength and distribution of these winds play a crucial role in determining the magnitude and location of the long planetary scale waves in the atmosphere. Such waves may be vitally important in determining the climate and its variations in lower atmosphere.

Callis notes that if ozone changes in the stratosphere due to CFM's have the potential to significantly alter stratospheric winds, they also have the potential to alter tropospheric climate in a manner other than by the greenhouse effect.

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RELEASE NO. 81-113

NOTE TO EDITORS

Following is based on an abstract of a paper entitled "Ocean Gravity Wave Spectrum Measurements from an Aircraft with the Microwave Radar Two-Frequency Resonance Technique" by James W. Johnson, researcher at NASA's Langley Research Center, Hampton, Va. and D. E. Weissman, of the department of Engineering Science, Hofstra University, Hempstead, N.Y. It was presented Dec. 11 at a meeting of the American Geophysical Union, San Francisco.

OCEAN GRAVITY WAVE SPECTRUM MEASUREMENTS

Prior to the 1970's, Earth observation from satellites was limited to sensors operating in the infrared and visible regions of the electromagnetic spectrum. During the 1970's, the United States began to complement these with instruments operating in the short radio wave (microwave) region. One motivation was that microwave measurements do not require sunlight and are relatively unperturbed by intervening cloud cover and light rain.

This interest led to the 1978 launch of SeaSat, which demonstrated a day/night, practically all-weather, global measurement capability for oceanic remote sensing. Using three microwave radars and one microwave radiometer, SeaSat monitored such things as sea surface temperature, surface wind speed and direction, and wave height on a global scale and produced radar images of the surface on a smaller scale.

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December 10, 1981

Beyond SeaSat, the European Space Agency and the National Space Development Agency of Japan, in addition to Canada and the U.S., have plans for microwave remote sensing satellites during the 1980's.

One NASA goal for microwave oceanic remote sensing is the development of a satellite ocean wave sensor. The SeaSat Synthetic Aperture (SAR) produced images containing surface wave features. However, a quantitative estimate of the "gravity wave spectrum," using a SAR or some other candidate sensor, is required. This is a statistical measure of the energy distribution in the sea surface wave field as a function of wave length.

The two-frequency microwave radar resonance technique, the topic of a paper presented to a meeting of the American Geophysical Union in San Francisco this month, can in principle infer the "gravity wave spectrum" and is being studied as a potential satellite ocean wave sensor.

The paper, entitled "Ocean Gravity Wave Spectrum Measurements from an Aircraft with the Microwave Radar Two-frequency Resonance Technique," is the joint product of James W. Johnson, researcher at NASA's Langley Research Center, Hampton, Va. and D. E. Weissman, of the Department of Engineering Science, Hofstra University, Hempstead, N.Y.

The measurement involves tuning the radar, with respect to the frequency difference, to match the various component wavelengths in the surface energy spectrum.

Theoretical analyses and aircraft experiments in the North Sea and the Atlantic Ocean have been conducted by Langley Research Center to evaluate the technique from a moving platform and to correlate experimental results with the theory.

A demonstration of the two-frequency technique from space is planned as part of the Microwave Remote Sensing Experiment, a European contribution to the first Space Shuttle/Spacelab mission.

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RELEASE NO. 81-114

MANAGERS RECEIVE PRESIDENTIAL HONORS

Hampton, Va.-- Two managers at NASA's Langley Research Center have been honored with Presidential awards for sustained accomplishments in the Federal service.

Dr. Donald P. Hearth, Langley Director, received the Presidential Rank of Distinguished Senior Executive. Paul F. Holloway, Director for Space, received the Presidential Rank of Meritorious Service.

The highest award that can be given to a civilian was presented to Hearth by President Ronald Reagan in ceremonies at the White House October 14. Only 25 Federal executives received this Presidential honor for 1981.

Hearth was specifically honored for his work in defining NASA's planetary exploration program for the 1970s, for a long-range study of space exploration of the planets that included Mariners IX and X, the Viking Orbiter, Pioneers X and XI, and others.

As leader of a special task force in the mid-1970s, he developed NASA's "Outlook for Space," a definitive analysis and forecast for future space exploration. As Director of Langley, he oversaw the culmination of the Viking Project, construction of the National Transonic Facility, and most recently, a NASA study of program management.

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December 22, 1981

Holloway was cited for his expertise in hypersonic aerodynamics that correctly identified serious aerodynamic heating problems in the evaluation of candidate Space Shuttle concepts, and for his overall coordination and direction of Langley's Shuttle support program, while simultaneously implementing an environmental observation program.

He received the award in special ceremonies at the State Department in Washington, D.C., October 14.

A total of 96 Federal employees were honored with the Meritorious Service Rank, including 14 from NASA. Among other recipients of the award were former Langley managers Walter B. Olstad, now at NASA Headquarters in Washington, D.C., and Raymond Romatowski, with the Department of Energy. Three other NASA executives were honored with Hearth: A. Thomas Young, Director of the Goddard Space Flight Center, Greenbelt, Md., and former Langley researcher; Richard G. Smith, Director of the Kennedy Space Center, Fla., and Walter C. Williams, NASA Chief Engineer.

In letters congratulating Hearth and Holloway on the Presidential honors, NASA Administrator James Beggs and Deputy Administrator Hans Mark wrote, "Your accomplishments have brought recognition and pride to you, the Agency, and your country. We add our personal congratulations."

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Release No. 82-52

NASA PEOPLE, PROGRAMS AND PLANES FEATURED IN ANNUAL OSHKOSH FLY-IN

Hampton, Va. -- Oshkosh. In Wisconsin. More than a half-million people will be there in early August. More than 10,000 aircraft will be flown there. It's the site of the largest annual aviation convention in the United States, and NASA aeronautics will be one of the star attractions.

In a "Salute to NASA Aeronautics," the theme of this year's convention, the Experimental Aircraft Association will highlight NASA research and advanced technology developments in civil, military and general aviation.

The convention will be held from July 31 to Aug. 7.

The main feature of the NASA exhibit area will be a 5,400-square-foot NASA Pavilion. Six exhibit areas will graphically portray the entire NASA aeronautics research program: flight efficiency, increased passenger comfort, enhanced safety, environmental compatibility, national security and economic well-being.

Langley Research Center is a heavy contributor to the 1982 program, as are the Ames/Dryden and Lewis centers. Langley will display two general aviation research aircraft, and will provide 11 of 27 forum speakers and one of three aerospace lecturers. The forum speakers will present technical papers based on their work, while the lecturers will provide regular demonstrations using slides,

- more -

July 27, 1982

models and other aids.

Langley will also introduce the NASA AEROVAN, a mobile exhibit and lecturer that describe NASA aeronautics. After the convention, the AEROVAN will begin traveling to conventions, colleges, universities and other organizations for free lecture programs.

Craftsmen from Langley shops will demonstrate wooden model-making (for the Langley Spin Tunnel), the final stages of making a metal model, and the electronic bonding of composite materials.

Ten distinguished NASA aeronautical researchers will be honored in a special ceremony the evening of Aug. 3. Three are from Langley: John P. Reeder, Richard T. Whitcomb and W. Hewitt Phillips.

Also participating in convention activities Aug. 3 will be NASA Administrator James M. Beggs; Associate Administrator for Aeronautics and Space Technology Dr. Jack L. Kerrebrock; and the directors of Langley, Ames and Lewis centers.

On the evening of Aug. 4, STS-4 astronauts Kenneth Mattingly and Henry Hartsfield will visit the air show and narrate a film of their flight. The next morning, they will tour the convention and hold a news conference.

A daily air show, beginning at 4 p.m., will feature something different every day, as hinted by these daily convention themes:

- Sunday, Aug. 1 -- Warbirds in Action
- Monday, Aug. 2 -- The Oshkosh 500 (an air race emphasizing fuel efficiency) and the Aircraft Recreational Vehicle: Designs for Tomorrow
- Tuesday, Aug. 3 -- Special Salute to NASA
- Wednesday, Aug. 4 -- Antique and Classic Parade of Flight
- Thursday, Aug. 5 -- Homebuilt Revue

- Friday, Aug. 6 -- EAA Aviation Auction '82
- Saturday, Aug. 7 -- The Wonderful World of Ultralights

Langley forum speakers are Philip W. Brown, Joseph R. Chambers, Perry L. Deal, H. Douglas Garner, W. Todd Hodges, Dwight G. McSmith, James M. Patton, Robert J. Pegg, Rodney H. Ricketts, John D. Shaughnessy and Dan Somers.

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RELEASE NO. 82-55

BLANCHARD RECEIVES NASA AMES RESEARCH CENTER AWARD

Hampton, Va.--Robert C. Blanchard, of the Space Systems Division at NASA's Langley Research Center, is the only person in the history of NASA to receive awards for the best technical papers at two NASA centers.

Blanchard recently received the H. Julian Allen Award for the best scientific or engineering paper at the Ames Research Center at Moffett Field, Calif. for 1982. In 1977 he received the H.J.E. Reid Award for the outstanding Langley paper.

The Ames Award was shared with six other individuals: Alvin Seiff, Donn B. Kirk, Simon C. Sommer and Richard E. Young, Ames; and John T. Findlay and G. Mel Kelly, Analytical Mechanics Associates, Inc., in Hampton. The award winning paper is titled "Measurements of Thermal Structure and Thermal Contrasts in the Atmosphere of Venus and Related Dynamical Observations: Results from the Four Pioneer Venus Probes."

Blanchard received Langley's Reid Award with Robert H. Tolson, Office of the Director, and Edward F. Daniels, Acoustics and Noise Reduction Division, for their paper, "Phobos and Deimos Encounter Experiment During the Viking Extended Mission."

As an aerospace engineer in the Aerothermodynamics Branch, Blanchard conducts research on extracting aero coefficients and atmospheric information from flight

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July 30, 1982

data obtained from entry vehicles.

Blanchard began his NASA career with Langley's Space Task Group, working on projects Mercury and Apollo in the reentry aspects of these early manned missions. He worked at the Goddard Space Flight Center in astrodynamics before coming to Langley to work on the Viking Project in the trajectory reconstruction and atmospheric determination of the Viking Landers.

Blanchard graduated cum laude from the University of Scranton in 1959 with a bachelor of science degree in physics. He received a master's degree in physics from the College of William and Mary in 1964. He has been a part-time instructor of mathematics from the University of Maryland and of physics from Embry-Riddle Aeronautical University.

In addition to his awards for his technical papers, Blanchard has received two Special Achievement awards and three Group Achievement awards.

He is a member of the Pioneer Venus Atmosphere Structure Science Team, the American Institute of Aeronautics and Astronautics, AIAA Flight Testing Technical Committee and co-investigator for the Galileo Project Atmosphere Structure Experiment.

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RELEASE NO. 82-56

INSULATION GIVES NATIONAL TRANSONIC FACILITY A NEW LOOK

Hampton, Va.--The interior surface of the National Transonic Facility Wind Tunnel at the Langley Research Center will have a new look by the end of July, thanks to over 100 dedicated Langley technicians.

These employees have spent approximately 70,000 hours since November 1981 finishing the installation of modified polyurethane insulation, which is required because the tunnel will operate with extremely cold (cryogenic) temperatures, down to minus 320 degrees F.

"We are very proud of the job the technicians have done, and it's our pleasure to recognize these employees for an unusually difficult job, especially under scheduling pressures," said Moses J. Long, Manager of the NTF Project Office. "It has been a nasty, grubby job, performed in a very dusty environment. These men and women are to be commended for a job well done."

Commended they were. At an "insulators' picnic" July 21, Langley Director Donald P. Hearsh recognized the outstanding work done by the employees and presented them with a plaque that will be permanently attached to the wind tunnel.

The special assignment began last fall when insulation work in the tunnel began to fall behind schedule. Budget constraints and quality requirements com-

- more -

July 30, 1982

bined to create a possible bottleneck in total construction. Director Hearsh and Robert L. Swain, Director for Systems Engineering and Operations, asked for Langley volunteers to finish the insulation work as quickly as possible. More than enough workers answered the call, according to Long.

The new wind tunnel will be used to study aircraft designs in the transonic range (across the speed of sound) in a research program that was developed and proven at Langley.

Cryogenic nitrogen gas will be used in the tunnel, allowing aircraft models to be tested in a more realistic flight environment than is possible in conventional wind tunnels. The super-cold environment will accurately simulate the full-scale flight conditions of high-speed aircraft by testing at Reynolds numbers.

An unusual feature of the new tunnel is that its insulation is installed inside the shell itself, not around the exterior. This lets the metal shell remain at atmospheric temperatures and saves on the cost of cooling the tunnel. The ridge insulation system is required to save on the amount of liquid nitrogen that is needed to achieve cryogenic temperatures. The particular polyurethane insulation material was selected because it can stand the extreme pressure and temperature environment inside the tunnel and it maintains some flexibility in that environment.

The installation job is relatively simple technology, but it proved to be extremely difficult to execute. The polyurethane material arrived in large sheets, which were cut into blocks of many sizes. The blocks had to be attached to the interior walls with a special epoxy adhesive, applied to both wall and block; clamped to the wall until the adhesive hardened; sanded smooth; and then covered with fiberglass cloth to prevent seepage during tunnel operations.

Sound simple? Try doing it on your back, or squeezed between large vanes that direct gas flow through the tunnel, or leaning into a corner space barely big enough

for head, hands and a block of insulation--while balancing on a section of portable scaffolding.

Small strips, squares and odd-shaped pieces of insulation had to be meticulously fitted around every beam, vane, rib, conduit, bracket, bolt and bulge inside the tunnel--almost as in a giant homemade jigsaw puzzle. And all of it done in the changing, shadowy glow of artificial work lights--the sun never shines inside a wind tunnel.

After the adhesive bonded the insulation to the tunnel surfaces, the blocks were sanded with power tools to provide a finish smooth enough for the final application of adhesive and fiberglass cloth.

"This created much dust, which, along with the cramped spaces, contributed greatly to the uncomfortable conditions," Long said. "They literally had to wedge themselves between turning vanes to fit and bond insulation and to put on the final coat of fiberglass. The worst aspect, though, was the black adhesive--the workers stayed covered with the stuff."

The adhesive--tar-like in both color and consistency--sticks, like all good adhesive, to almost any surface--coveralls, hard hats, gloves, shoes and human skin. Despite the "nasty, grubby" nature of the work and the rush to complete the job, a strong spirit quickly built within the group; a spirit of enthusiasm, devotion to the task and pride in the accomplishment.

"Now that the work is nearly completed," Long said, "the workers don't want to return to their original units. They have really enjoyed their temporary assignment and have become a very close-knit group."

The NTF--the first wind tunnel of its kind in the world--is a national laboratory that will allow the United States to maintain its leadership in high-performance commercial and military aircraft, plus develop future transport planes

that will be more fuel-efficient than today's aircraft.

When the NTF tunnel begins operating in December 1982, it will be used for major transonic research by NASA and the Department of Defense, sharing occupancy of the facility about 80 percent of the time. Another 20 percent of occupancy will be allocated to other government agencies, private industry and scientific groups.

The decision to build the NTF at Langley was made after a joint study of sites by the Department of Defense and NASA. Langley was the final choice because the center has the most experienced staff of aeronautical research specialist in the country.

These specialist have proven their ability during the last eight months in completing a most grueling task.

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RELEASE NO. 82-57

NASA STUDIES VOLCANIC CLOUD FOR ITS EFFECTS ON WEATHER

Hampton, Va.--NASA centers in Virginia and California, using the latest electronic sensing systems, are studying a widespread atmospheric gas and dust cloud spewed from a Mexican volcano to determine its potential effects on global weather patterns.

The giant cloud, thrown into the stratosphere by the El Chichon eruption in March and April, now covers much of the Northern Hemisphere. However, because of the natural variance and complexity of worldwide climate patterns, any effects the cloud might have would only become apparent in retrospect after scientists have examined current weather patterns.

Data gathered about the cloud now will provide the information base for later correlation between current weather changes and the cloud's movements and density during those weather changes. The cloud studies are part of NASA's Aerosol Climatic Effects Program. This ongoing examination of the atmospheric

- more -

August 3, 1982

effects of gaseous discharges is coordinated by Dr. James Pollack of NASA's Ames Research Center, Mountain View, Calif., and Dr. M. Patrick McCormick head of the Aerosol Research Branch at Langley Research Center, Hampton, Va.

To study the cloud, NASA is using satellites, U-2 aircraft and LIDAR (Light Detection and Ranging).

"This new stratospheric injection represents a once-in-a-lifetime chance to test various physical models that predict dispersion, temperature change, and dynamic and photochemical changes," said McCormick. "It's an amazing set of data. We have never observed this amount of material or at these heights from past eruptions."

The cloud is a mixture of dust and sulfuric acid. The sulfuric acid will provide spectacular sunsets for a few years after an eruption. However, the dust soon settles out. Sulfur dioxide from the volcano has combined with water to form sulfuric acid, which is highly reflective. These droplets remain in the stratosphere for as long as two years, absorbing thermal energy from the earth, thus warming the stratosphere, and reflecting sunlight, thus cooling the atmosphere below.

Satellite measurements revealed substantial amounts of sulfur dioxide in the eruption cloud. Some gases may yet remain, so it could continue to grow as well as spread.

Cooling attributed to volcanic clouds has had dramatic results on occasion in the past. An eruption in Indonesia in 1815 caused summer snowfall in New England in 1816, which became known as the year without a summer. It is not known now whether the El Chichon cloud is as large or as potentially disruptive.

LIDAR, mounted in a specially equipped Lockheed Electra aircraft, shoots laser pulses into the atmosphere and receives reflections back, "painting" the spatial and vertical extent of the cloud layers above the aircraft.

LIDAR flights made July 8 to 13 revealed several separate layers of material, the top one reaching as high as 33 kilometers (20 miles). The measurements, which confirmed earlier NOAA findings, also showed that the volcano put as much as 50 times (500 times in localized areas) the normal amounts of aerosols into the upper atmosphere; that the layers have spread to different latitudes, depending on altitude; and that sunlight reaching different parts of the earth's surface could be reduced by at least several percent.

While scientists believe any climatic changes caused by the cloud will be subtle, climatically sensitive regions may be affected more noticeably in the short term.

Stratospheric heating could be the first effect observed. The cloud is absorbing thermal radiation, which could raise the stratosphere's temperature by as much as 5 degrees or more. The cloud is also reducing the amount of solar energy reaching the ground.

Dr. Brian Toon, an atmospheric physicist at Ames, said that the most likely effect of the cloud could be a gradual temperature reduction of one half to 1 degree Fahrenheit in the Northern Hemisphere over the next two years.

Such a temperature reduction would be significant, but normal atmospheric variations could mask or accentuate the change.

Differential atmospheric heating in areas "shaded" by the cloud might also have significant effects. Various measurements already suggest about a 5 percent reduction in sunlight in the tropics from the cloud, a significant heat loss.

With the instruments available today, scientists hope to gain a much better understanding of the effects of such clouds than was possible in the past. One suspected effect observed decades ago is a possible link between volcanic clouds and early frosts for the two years following a large eruption -- a potentially

significant observation for high-latitude areas with short growing seasons.

However, NASA scientists are "not predicting an early frost or a shortened growing season or any dire occurrences," said McCormick.

Scientists estimate the cloud is 9.6 km (6 mi.) thick, on average, and between 21 to 33 km (13 to 18 mi.) in altitude. It appears to girdle the earth over more than 30 degrees of latitude, from south of the equator to as far north as Japan and across the United States-Mexican border. The cloud will spread over this country and Europe during the coming months and might eventually cover the entire Northern Hemisphere.

The cloud's lower layers move generally west to east, but wind shears high in the atmosphere are moving the top layers in the opposite direction. Several layers, however, are "sloshing around," according to McCormick, because of varying winds.

"Eventually, all the layers will be obiquitous," McCormick said, "smeared out over the most of the globe, with higher concentrations in the Northern Hemisphere."

NASA U-2 aircraft have flown in the cloud as high as 18,300 meters (60,000 feet) and reported that, by contrast, the 1980 Mt. St. Helens cloud could easily be seen and dissipated in a few days.

For a volcano's high-floating material to have an effect on earth's temperature, McCormick said there must be two conditions: "There must be a lot of material, and it must stay around a long time because the earth's surface, especially the oceans, have a lot of inertia."

How long it may take for El Chichon's cloud to affect earth's temperature is unknown, he noted. Some scientists predict two years, some five, others seven, but they are speculating.

"But if this material stays around for a long time," McCormick added, "there is going to be a noticeable change to surface temperature across the Earth, on the average."

"This is going to be a perfect case study to check mathematical models that exist on disturbances in temperature caused by an upper atmospheric layer of material, models that predict movement of material in the upper atmosphere, and general climate models," he concluded.

Scientists from NASA, NOAA and several universities will continue to study the cloud as it spreads.

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RELEASE NO. 82-60

LANSING NAMED ASSISTANT CHIEF OF NASA DIVISION

Hampton, Va.--Donald L. Lansing, former Head of the Unsteady Aerodynamics Branch, Loads and Aeroelasticity Division, is the new Assistant Chief of the Acoustics and Noise Reduction Division at NASA's Langley Research Center in Hampton, Va.

As Assistant Chief, Lansing is responsible for planning and directing analytical and experimental research programs in structural dynamics, acoustics, and noise control, as well as in human response to noise and vibration produced by commercial, military, and general aviation aircraft and spacecraft.

Lansing began his Langley career in 1956 as an aerospace engineer. In 1969 he became Head of the Theoretical Acoustics Section; in 1974 Head of the Acoustics Branch, and in 1978 Head of the Aeroacoustics Branch, all in the Acoustics and Noise Reduction Division. He became Head of the Unsteady Aerodynamics Branch in 1981.

He recently completed a one-year assignment at NASA Headquarters in Washington, D.C., as Program Manager in the Propulsion Office, Research and Technology Division. The assignment was part of NASA's Critical Assignment Development Program, designed to meet a critical program need at NASA Headquarters or a field center and to develop employees who have special skills critical to a NASA program.

- more -

August 9, 1982

Lansing has specialized in the fields of applied mathematics, linear wave propagation and aircraft noise, and has been a key contributor to Langley's acoustics research since 1969.

A native of New York, he received a bachelor of science degree in mathematics from Union College in 1956 and a master of science degree in mathematics in 1963 from Virginia Polytechnic Institute and State University. He has completed graduate work in applied mathematics at North Carolina State University and was awarded a one-year Stanford Sloan Fellowship in Advanced Management at Stanford University in 1973.

The author or co-author of over 25 technical papers, Lansing is a member of the Acoustical Society of America, American Institute of Aeronautics and Astronautics and the American Association for the Advancement of Sciences.

Lansing and his wife, Janet, live in Newport News. They have three sons.

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RELEASE NO. 82-62

WYLE LABS TO CONTINUE NASA SUPPORT WORK

Hampton, Va.--Wyle Laboratories has been selected for negotiation of a contract to provide electronics instrument support for NASA's Langley Research Center.

The cost-plus-award-fee contract will cover a period of five years, beginning October 1, 1982. The contract work is valued at approximately \$35 million.

Wyle Laboratories will provide instrument inspection, calibration, maintenance and application to satisfy the measurement requirements of tests conducted in Langley's test facilities. The company will also provide design, modification and maintenance work on hardware and computer programs.

The work will be done at Langley and at the Wyle plant in Hampton.

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RELEASE NO. 82-63

IN SWAMPS AND FROM SPACE, SCIENTISTS LOOK AT 'CLEAN' COUNTRY AIR

Hampton, Va.--Fresh farm, mountain and ocean air may not be as clean as once thought, according to atmospheric scientists who recently met at a symposium cosponsored by the American Meteorological Society, the American Geophysical Union and NASA.

In the largest gathering of its kind to date, scientists from the United States and several foreign countries exchanged information and ideas about a part of the atmosphere that, until recently, has not received much attention. The lower atmosphere -- called the troposphere -- is 80 percent of the total atmosphere. It is where airplanes fly and where weather develops and moves about, yet relatively little is known about how its composition evolved and how man may be changing it. Most research on atmospheric composition has focused on studies of industrialized urban areas and on the stratosphere (the upper 20 percent of the gases that surround the Earth).

What researchers call the non-urban troposphere brought nearly 200 representatives from industry, universities and government to Williamsburg, Va. for the "Second Symposium on the Composition of the Non-Urban Troposphere."

- more -

August 23, 1982

Nearby NASA-Langley Research Center, in Hampton, Va., contributed more than 10 percent of the 112 technical presentations. Other NASA installations that made valuable contributions to the symposium were the Ames Research Center, Mountain View, Calif.; Wallops Flight Facility, Wallops Island, Va.; and Goddard Space Flight Center, Greenbelt, Md.

The Langley presentations included important new findings about three environmentally significant gases: methane, carbon monoxide and ozone.

"Not until the past decade," said symposium coordinator Dr. Jack Fishman of Langley, "have researchers begun to appreciate the potential importance of a trace gas in the troposphere (a gas that might appear in amounts of several parts per billion, for example). Also, researchers have only recently developed instruments with enough sensitivity to accurately measure certain gases in trace amounts."

Several Langley groups are studying methane, which is important because it and other trace gases (including ozone) can affect atmospheric chemistry and possibly reduce the amount of heat the Earth radiates back into space, contributing to global warming. Methane is produced both naturally and by man's activities.

Randy Cofer, of Langley's Field Experiments Branch, reported that there is slightly more methane in the Northern Hemisphere than the Southern Hemisphere. Data were taken during a month-long cruise on the Atlantic Ocean between Hamburg, Germany, and Montevideo, Uruguay, that confirmed earlier studies. Another conclusion is that methane concentrations in the Northern Hemisphere have increased since the first systematic measurements were taken in 1970. This finding was also supported by other presentations at the symposium, and scientists suspected that the increase may be due to man's activities.

Scientists have long assumed that the primary sources of atmospheric methane are natural, coming from wetland areas (swamps and marshes) and, to a lesser degree,

from cows and other ruminant animals that give off the gas in the process of digestion. A group of Langley researchers, led by Dr. Robert Harriss, presented evidence at the symposium that may cause thinking in this area to be reevaluated. Through a series of ground-based measurements, they found two things: (1) there can be enormous variation in the amounts of methane produced from one wetland area to another and even within a single wetland area, and (2) wetlands may contribute much less of the global methane than was previously estimated.

These results, vigorously debated at the meeting, documented the complexity of the ecosystem in which methane is naturally produced and suggest that man's activities may disturb the natural methane cycle much more than was previously thought.

Another Langley experiment discussed at the symposium concerned measurements of atmospheric carbon monoxide, ozone, other trace gases and aerosols (tiny particles suspended in the air). The measurements were taken from an airplane flown off the East Coast of the United States in the summer of 1981. An orbiting satellite has identified a plume of air that originated over the eastern U.S., extending approximately 2,000 kilometers (about 1,250 miles) over the Atlantic. Researchers flew the airplane into and over the plume. When they flew through the plume, they took direct measurements of carbon monoxide and ozone; when flying over the plume, they used remote sensing devices to measure ozone and aerosol concentrations.

Team spokesman Dr. Ed Browell reported that the plume extended up to two kilometers (1.2 miles) in altitude and contained relatively high concentrations of carbon monoxide, ozone and aerosol particles. All three are considered pollutants in the lower atmosphere. In essence, their close-up look confirmed the location and overall size of the plume as indicated by satellite readings. The satellite

instrument, however, is only capable of "seeing" aerosols.

A by-product of the dual set of airplane measurements (through and over the plume) is that the capability of an advanced laser remote sensing instrument, developed by Browell's team, was successfully demonstrated. The instrument proved that a sensing device does not need to be flown through a plume to take accurate measurements of ozone and aerosol concentrations.

In November 1981, a Langley instrument for the remote sensing of carbon monoxide flew aboard the second flight of the Space Shuttle and took the first measurements from space of a trace gas in the lower atmosphere. Results of the experiment, called MAPS (Measurement of Air Pollution from Satellites), were presented for the first time at the Non-Urban Symposium.

Data quality was exceptional and exceeded all expectations. Dr. Henry Reichle, of Langley's Chemistry and Dynamics Branch, presented measurements of carbon monoxide from selected orbits. The MAPS instrument showed that it could literally "map" the location of strong gradients of carbon monoxide (where low concentrations meet high concentrations) down to 100-kilometer (60-mile) areas or less. This high resolution allowed the Shuttle-borne experiment to define relatively small regions of carbon monoxide in elevated concentrations.

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RELEASE NO. 82-66

NASA-LANGLEY STAFF MEMBERS RECEIVE ADVANCED DEGREES

Hampton, Va.--Twelve NASA Langley Research Center staff members have received advanced degrees through the center's Graduate Study Program during Fiscal Year 1982.

The program, established in the late 1940s, provides Langley scientists, engineers, and administrators an opportunity to improve their proficiency in aeronautical and space research and earn advanced degrees while working at Langley. Approximately 829 employees have been awarded master's or doctoral degrees through the program.

New doctoral degrees have been awarded to the following three employees: James A. Martin, Space Systems Division, Doctor of Science in Flight Sciences from George Washington University; Gregory V. Selby, High-Speed Aerodynamics Division, Doctor of Philosophy in Mechanical and Aerospace Engineering from the University of Delaware; and George C. Olsen, Loads and Aeroelasticity Division, Doctor of Philosophy in Mechanical/Aerospace Engineering from North Carolina State University.

Master's degrees were awarded to nine employees: William W. Fernald, Systems Engineering Division, and G. Larry Roderick, Army Structures Laboratory (AVRADCOM), Master of Engineering Administration; James J. Buglia, Atmospheric

- more -

September 3, 1982

Environmental Sciences Division, Master of Science in Atmospheric Modeling; John W. Paulson, Jr., Low-Speed Aerodynamics Division, Master of Science in Flight Sciences; Robert L. Calloway, Space Systems Division, Master of Science in Fluid Mechanics and Thermal Sciences.

John C. Wilson, an Army employee in Low-Speed Aerodynamics Division, Master of Science in Industrial Management; Dennis L. Dicus, Material Division, Master of Science in Material Science; Peter F. Jacobs, Transonic Aerodynamics Division, Master of Science in Mechanical Engineering, all from George Washington University; and John W. Cox, System Engineering Division, Master of Science in Mechanical Engineering from Old Dominion University.

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MOORE RETIRES FROM NASA-LANGLEY

Hampton, Va.--William M. Moore, Chief of the Flight Electronics Division at NASA's Langley Research Center, retired September 3. Since December 1980, he has been responsible for the division's research in solid-state electronics and the development of advanced avionics systems for civil aircraft and new techniques for remote measurements of the environment from spacecraft.

Moore joined the Langley staff in 1955 as a radar and telemetry engineer. From 1956 to 1957 he was an instrumentation engineer on the Fleet Ballistic Missile Program at Chrysler Missile Division in Detroit.

Moore returned to Langley in 1957, where he developed the performance telemeter for the X-15 and instrumentation for the Scout rocket. He has served as the NASA Telemetry Specialist on Dyna Soar Instrumentation Group, Head of the Instrument Research Division Digital Techniques Study Group, Head of the Spacecraft Instrument Development Section, Head of the Telecommunications Research Branch and Assistant Chief for Space of the Flight Electronics Division. He was appointed Acting Chief of the Flight Electronics Division in September 1980.

He has specialized in spacecraft electronic systems, components and devices and has been responsible for the electronic support for most of Langley's space

- more -

September 3, 1982

flight projects. He has planned and directed the research programs and flight supporting tasks for space applications, such as the subsystems for the Space Shuttle and the electronic systems for the Viking Program.

Prior to coming to Langley, Moore was a radar field engineer at Sperry Gyroscope in Great Neck, Long Island, from 1952 to 1955. He served in the U.S. Navy from 1944 to 1946 and from 1950 to 1952. He was a participant in the Newport News Shipbuilding and Dry Dock Company's Engineer Training Program from 1949 to 1950.

Born in Hampton, Va., Moore graduated from Upper Darby High School in Pennsylvania. He received a bachelor of science degree in electrical engineering from Swarthmore College in 1949.

The author or co-author of three technical publications, Moore has served as chairman of the Fourth NASA Intra-Center Microelectronic Symposium, Design and Integration Panel for the NASA Observatory - Class Spacecraft Review Board (Garbarini Committee), Communications Group for OART Space Shuttle Integrated Electronic Technology Committee, Software Verification for Viking Computer Source Evaluation Board, Earth Radiation Budget Experiment Source Evaluation Board, LIMS Award Fee Board and ERBE Award Fee Board. He has been a member of the Program Committee for the Third NASA Intra-Center Microelectronic Symposium, NASA Subcommittee for Microelectronic Parts Reliability, Electronics Review Team for Pegasus Satellite Project, Electronic Subsystem Panel for NASA Shuttle Phase-B Source Evaluation Board, NASA Efficient Sensor System Working Group, and Electronic Subcommittee of the Space Technology Advisory Committee.

He was presented the NASA Exceptional Service Medal in 1977 in recognition of significant support to the Viking Project Office; a Langley Special Achievement Award in 1975 and the Pegasus NASA Group Achievement Award in 1966.

Moore and his wife, Eunice, live in Williamsburg. They have two children.

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RELEASE NO. 82-68

HISPANIC HERITAGE REMEMBERED AT NASA-LANGLEY

Hampton, Va.--NASA's Langley Research Center will recognize the accomplishments of Hispanic-Americans Wednesday, September 15, by presenting a special colloquium in observance of National Hispanic Heritage Week.

Orlando A. Gutierrez, Acting Agency Wide Hispanic Employment Program Manager at NASA Headquarters in Washington, D.C., will speak on "The Hispanic Perspective: A Look at NASA" at 9 a.m. in the Activities Center, Building 1222.

Born in Havana, Cuba, Gutierrez received a bachelor of science degree in mechanical engineering from Rensselaer Polytechnic Institute of Technology and pursued post graduate work at Case Western Reserve University and the Massachusetts Institute of Technology.

Gutierrez began his NASA career in 1961 at the Lewis Research Center, working as a researcher and program manager on programs involving heat transfer and acoustics. He has served as Hispanic Employment Program Manager at Lewis on a part-time basis since 1973, and is the past chairperson of the HEPM Council of the Cleveland Federal Executive Board. He is presently detailed to NASA Headquarters.

Before joining NASA, Gutierrez spent two years as a customer engineer with the

- more -

September 3, 1982

IBM World Trade Corporation and 10 years as Head of the Heat Transfer Laboratory at the American Locomotive Company.

The author of more than 25 technical papers, Gutierrez has received the NASA Equal Employment Opportunity Medal and numerous certificates of appreciation, including citations from the mayor of Cleveland and the Commonwealth of Puerto Rico.

The public is invited to attend the colloquium, sponsored by Langley's Office of Equal Opportunity Programs.

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RELEASE NO. 82-70

NASA-LANGLEY EMPLOYEES HONORED WITH SERVICE AWARDS

Hampton, Va.--One hundred sixteen Langley Research Center employees with 40, 35 and 30 years of service have been honored with service emblems and certificates.

Receiving awards were:

Forty Years' Service: Louis A. Brunner, Jr.; Carter N. Catlett; John T. Craigs, Jr.; Robert V. Hess; Reid A. Hull; Solomon Williams; and Fred C. Wilson.

Thirty Five Years' Service: Nadine J. Batkins; Clarence I. Brooks; Emmett L. Bryant; William A. Byars, Jr.; Kenneth N. Cole; Carl E. Copeland; Joseph S. Denn; John A. Dodgen; Taylor C. Fraser, Jr.

Bertrand E. Fullerton; Jess E. Gerringer; Frederick J. Hines, Jr.; Charles A. Holt; Stewart H. Irwin; Joseph W. Jewel, Jr.; Charles E. Johnson; David R. Johnson; Paul W. Jones, Sr.

James E. Justice; Charles E. Kelly; Anna J. Lockard; Ray W. Lovelady; William D. Mace; William H. Michael, Jr.; William R. Page; Alexander O. Peterson; William M. Phillips, Jr.

Jesse Pittman; Frank G. Reaves, Jr.; Donald R. Riley; Herbert F. Shackelford; James W. Sparrer; James T. Winn; and Marion A. Wise.

- more -

September 17, 1982

Thirty Years' Service: Melvin S. Anderson; Cornelius B. Apple; Otis L.

Artis; Colossie N. Batts; Martin T. Baxter; Eugene A. Brady; Charles F. Bryan, Jr.; Roger I. Buchanan; Claude F. Burge, Jr.

F. Dolan Clontz; Andrew B. Connor; James T. Davis; Joseph P. DeGinder, Jr.; Charles E. Drummond; Ernest R. Dunnigan; John R. Ellingsworth; Philip E. Everhart; Doris J. Forrest; Willard E. Foss, Jr.

John W. Fowler; William E. Frazier; Earl S. German, Jr.; Virginia P. Gibson; Herbert L. Greene; Joseph T. Guy; Larry B. Hall; Joseph H. Harrell; George M. Hogg; Louis H. Hunt, Jr.

Elsie D. Illg; Charles E. Jones; Virgil H. Justice, Jr.; William H. King; Charles R. Lane; Walter M. Laughon, Sr.; Sylvia B. Lawson; C. G. Leffler, Jr.; Robert K. Lenning; Miles L. Lockard.

Robert T. Magee; Virginia C. Maynard; James L. McConnell; Powell D. Mitchell; Kenneth S. Mitcheltree; James F. Montgomery; Fay S. Moore, Jr.; Mary C. Moore; Richard Morris; John G. Mulqueen.

William A. Newson, Jr.; Waldo I. Oehman; Russell F. Parr; Irvin L. Peddrew, Jr.; John B. Peterson, Jr.; Charlotte N. Phillips; John L. Price; James E. Rammell; Betty R. Riggin; Jesse G. Ross.

Marianne T. Russell; John W. Simpson; Daniel W. Soloman, Jr.; Charles F. Spear; Irving M. Stewart; Richard K. Stoops; John W. Sundy; Marvin G. Torrence; Charles I. Tynan, Jr.; Louis F. Vosteen; William R. Wade; Dave E. Williams; Victor E. Wilson; Paul R. Yeager; Charles O. Yokum; James C. Young.